

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

ATES
ENT

TRE

ATION

D

X

19

R

'43

UNITED STATES
DEPARTMENT OF AGRICULTURE
LIBRARY



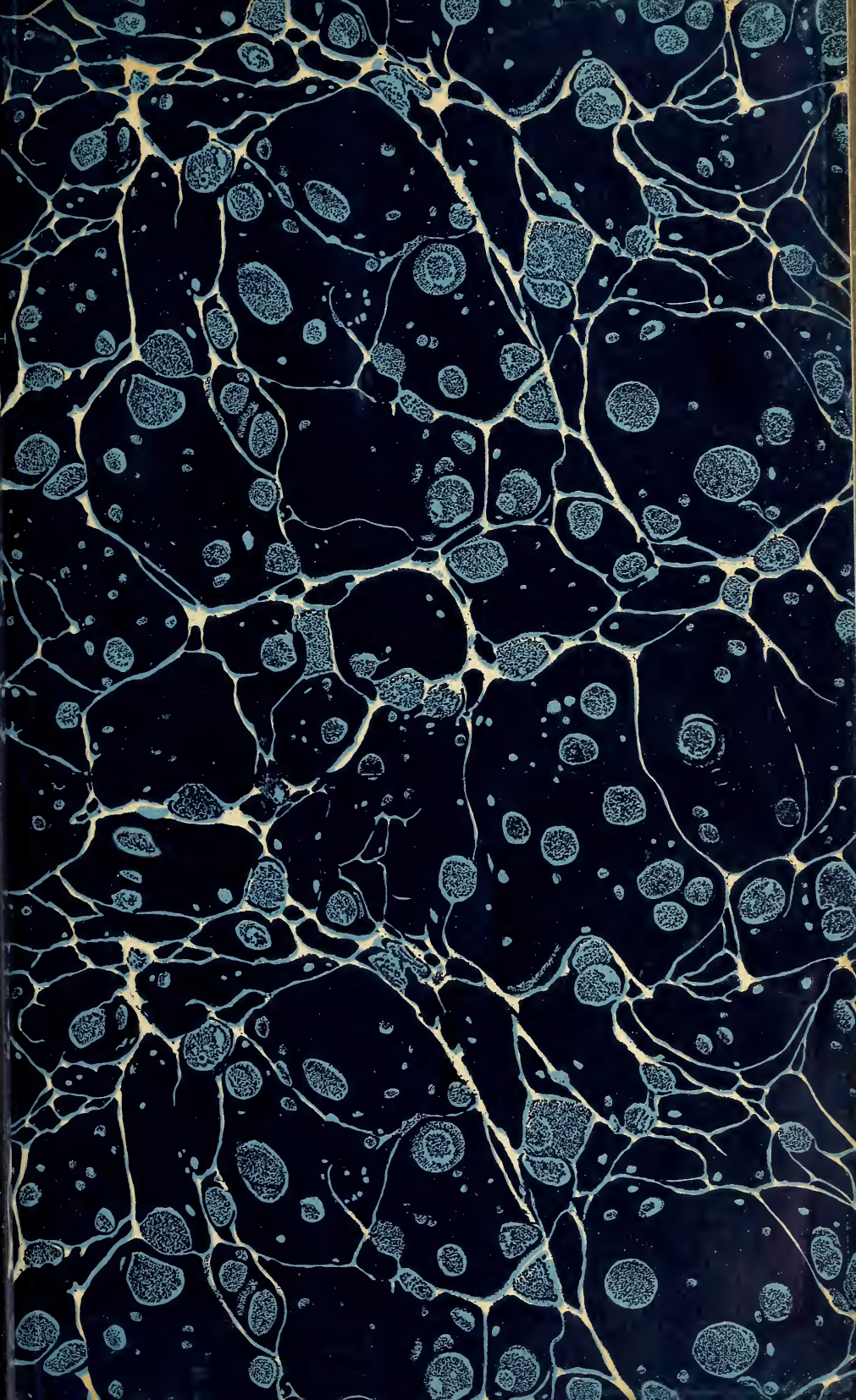
352730

Reserve

Book number 1

Ex6R

Index 26-40



6766
2
D
7
Issued March, 1926

U. S. DEPARTMENT OF AGRICULTURE
OFFICE OF EXPERIMENT STATIONS
E. W. ALLEN, CHIEF

LIBRARY
RECEIVED

★ JUN 25 1927 ★

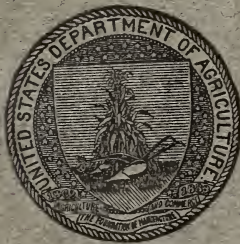
GENERAL INDEX, U. S. Department of Agriculture
TO

EXPERIMENT STATION RECORD

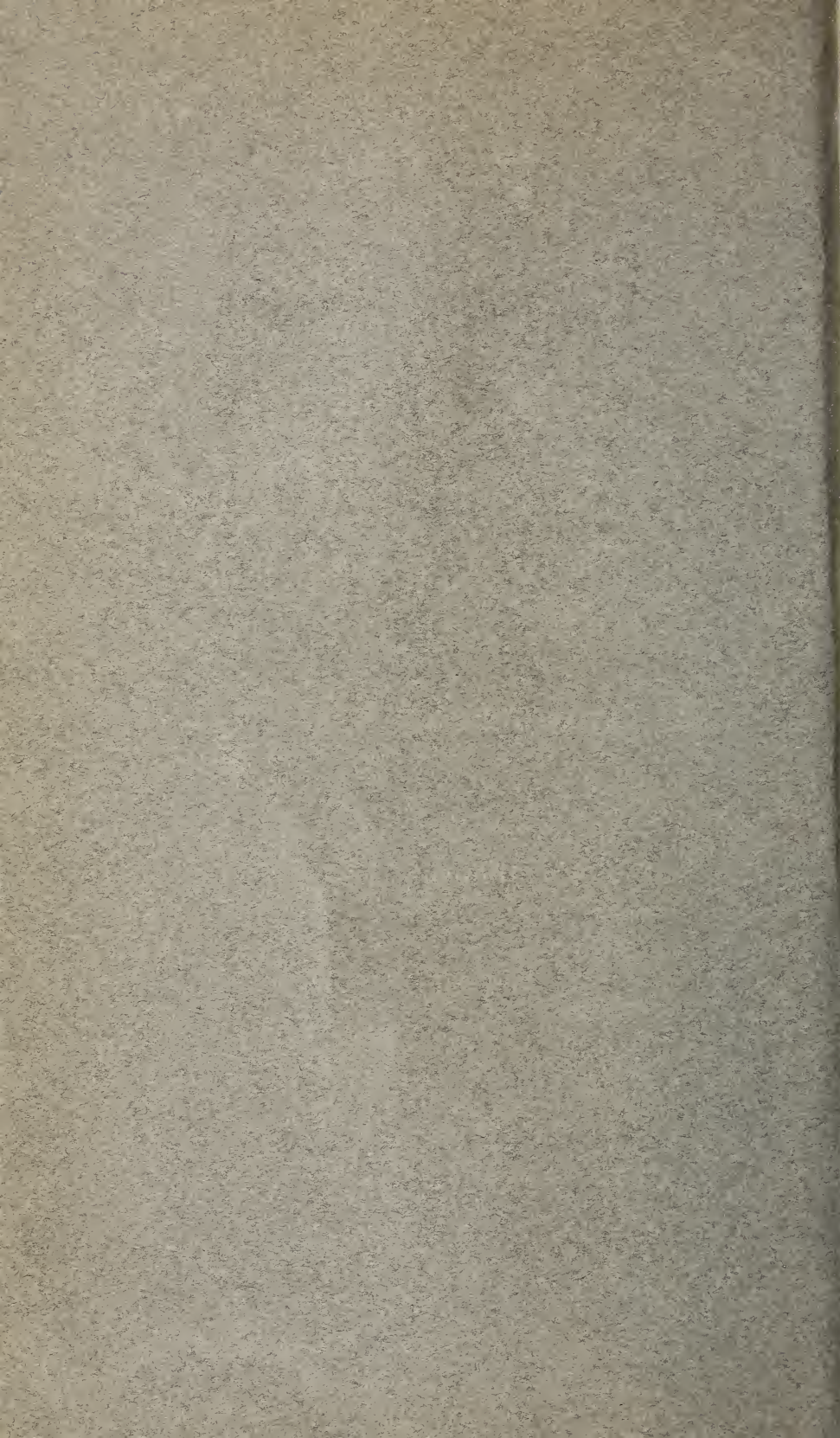
5

VOLS. XXVI TO XL, 1912-1919

PREPARED BY
MARTHA C. GUNDLACH



WASHINGTON
GOVERNMENT PRINTING OFFICE
1926



Issued March, 1926

U. S. DEPARTMENT OF AGRICULTURE
OFFICE OF EXPERIMENT STATIONS
E. W. ALLEN, CHIEF

GENERAL INDEX
TO
EXPERIMENT
STATION
RECORD

VOLS. XXVI TO XL, 1912-1919

PREPARED BY
MARTHA C. GUNDLACH



*Library of the U. S. Department of Agriculture,
Washington, D. C.*

WASHINGTON
GOVERNMENT PRINTING OFFICE
1926

EXPERIMENT STATION RECORD

Editor: H. L. KNIGHT

EDITORIAL DEPARTMENTS

Agricultural and Biological Chemistry—SYBIL L. SMITH.
 Meteorology—W. H. BEAL.
 Soils and Fertilizers—R. W. TRULLINGER.
 Agricultural Botany and Diseases of Plants—W. H. EVANS, Ph. D., W. E. BOYD.
 Genetics—H. M. STEECE, J. W. WELLINGTON, G. HAINES.
 Field Crops—H. M. STEECE.
 Horticulture and Forestry—J. W. WELLINGTON.
 Economic Zoology and Entomology—W. A. HOOKER, D. V. M.
 Animal Husbandry, Dairying, and Dairy Farming—G. HAINES.
 Veterinary Medicine—W. A. HOOKER.
 Agricultural Engineering—R. W. TRULLINGER.
 Rural Economics and Sociology, Agricultural and Home Economics Education—LOUISE MARBUT.
 Foods and Human Nutrition—SYBIL L. SMITH.
 Textiles and Clothing—H. M. STEECE, SYBIL L. SMITH.
 Home Management and Equipment—LOUISE MARBUT, R. W. TRULLINGER.
 Indexes—MARTHA C. GUNDLACH.
 Bibliographies—ANNA HOWARD.

THE AGRICULTURAL EXPERIMENT STATIONS

- ALABAMA**—
 College Station: *Auburn*; M. J. Funchess.¹
 Canebrake Station: *Uniontown*; W. A. Cammack.¹
 Tuskegee Station: *Tuskegee Institute*; G. W. Carver.¹
- ALASKA**—*Sitka*: C. C. Georgeson.¹
- ARIZONA**—*Tucson*: J. J. Thorner.¹
- ARKANSAS**—*Fayetteville*: D. T. Gray.¹
- CALIFORNIA**—*Berkeley*: E. D. Merrill.¹
- COLORADO**—*Fort Collins*: C. P. Gillette.¹
- CONNECTICUT**—
 State Station: *New Haven*; } W. L. Slate, jr.¹
 Storrs Station: *Storrs*; }
- DELAWARE**—*Newark*: C. A. McCue.¹
- FLORIDA**—*Gainesville*: W. Newell.¹
- GEORGIA**—
Experiment: H. P. Stuckey.¹
Tifton: Coastal Plain Station; S. H. Starr.¹
- GUAM**—*Island of Guam*: C. W. Edwards.¹
- HAWAII**—
 Federal Station: *Honolulu*; J. M. Westgate.¹
 Sugar Planters' Station: *Honolulu*; H. P. Agee.¹
- IDAHO**—*Moscow*: E. J. Iddings.¹
- ILLINOIS**—*Urbana*: H. W. Mumford.¹
- INDIANA**—*La Fayette*: G. I. Christie.¹
- IOWA**—*Ames*: C. F. Curtiss.¹
- KANSAS**—*Manhattan*: L. E. Call.¹
- KENTUCKY**—*Lexington*: T. P. Cooper.¹
- LOUISIANA**—
 State Station: *Baton Rouge*; }
 Sugar Station: *Baton Rouge*; } W. R. Dodson.¹
 North La. Station: *Calhoun*; }
 Rice Station: *Crowley*; }
 Fruit and Truck Station: *Hammond*; }
- MAINE**—*Orono*: W. J. Morse.¹
- MARYLAND**—*College Park*: H. J. Patterson.¹
- MASSACHUSETTS**—*Amherst*: S. B. Haskell.¹
- MICHIGAN**—*East Lansing*: R. S. Shaw.¹
- MINNESOTA**—*University Farm, St. Paul*: W. C. Coffey.¹
- MISSISSIPPI**—*A. and M. College*: J. R. Ricks.¹
- MISSOURI**—
 College Station: *Columbia*; F. B. Mumford.¹
 Fruit Station: *Mountain Grove*; F. W. Faurot.¹
 Poultry Station: *Mountain Grove*; T. W. Noland.¹
- MONTANA**—*Bozeman*: F. B. Linfield.¹
- NEBRASKA**—*Lincoln*: E. A. Burnett.¹
- NEVADA**—*Reno*: S. B. Doten.¹
- NEW HAMPSHIRE**—*Durham*: J. C. Kendall.¹
- NEW JERSEY**—*New Brunswick*: J. G. Lipman.¹
- NEW MEXICO**—*State College*: Fabian Garcia.¹
- NEW YORK**—
 State Station: *Geneva*; } R. W. Thatcher.¹
 Cornell Station: *Ithaca*; }
- NORTH CAROLINA**—*Raleigh*: R. Y. Winters.
- NORTH DAKOTA**—*Agricultural College*: P. F. Trowbridge.¹
- OHIO**—*Wooster*: C. G. Williams.¹
- OKLAHOMA**—*Stillwater*: C. T. Dowell.¹
- OREGON**—*Corvallis*: J. T. Jardine.¹
- PENNSYLVANIA**—
 State College: *R. L. Watts*.¹
 State College: *Institute of Animal Nutrition*
E. B. Forbes.¹
- PORTO RICO**—
 Federal Station: *Mayaguez*; D. W. May.¹
 Insular Station: *Rio Piedras*; R. M. Ramos.¹
- RHODE ISLAND**—*Kingston*: B. L. Hartwell.¹
- SOUTH CAROLINA**—*Clemson College*: H. W. Barre.¹
- SOUTH DAKOTA**—*Brookings*: J. W. Wilson.¹
- TENNESSEE**—*Knoxville*: C. A. Mooers.¹
- TEXAS**—*College Station*: B. Youngblood.¹
- UTAH**—*Logan*: William Peterson.¹
- VERMONT**—*Burlington*: J. L. Hills.¹
- VIRGINIA**—
Blacksburg: A. W. Drinkard, jr.¹
Norfolk: Truck Station; T. C. Johnson.¹
- VIRGIN ISLANDS**—*St. Croix*: J. B. Thompson.
- WASHINGTON**—
 College Station: *Pullman*; E. C. Johnson.¹
 Western Station: *Puyallup*; W. A. Linklater.
- WEST VIRGINIA**—*Morgantown*: H. G. Knight.¹
- WISCONSIN**—*Madison*: H. L. Russell.¹
- WYOMING**—*Laramie*: J. A. Hill.¹

¹ Director.

² On leave.

³ Superintendent.

EDITORIAL NOTES

VOLUME 26

	Page
The Columbus meetings.....	1
The affiliation of societies for agricultural science.....	3
The ethical side of experiment station practice.....	4
Aiding agriculture in Great Britain under the development act.....	101
Progress in agricultural instruction.....	301
The provision of agricultural teachers.....	303
The decline of the station annual report.....	401
Dr. John B. Smith, deceased.....	403
The occupation of the agricultural college graduate.....	601
Agricultural extension at the Southern Commercial Congress.....	701
The organization and administration of extension work.....	703

VOLUME 27

The need for research in home economics.....	1
Fifth session of the Graduate School of Agriculture.....	101
The agricultural appropriation act of 1912-13.....	301
Dr. M. A. Scovell, deceased.....	401
The anniversary of agricultural education.....	601
The influence of the land-grant colleges on higher education.....	605
The semicentennial of the National Department of Agriculture.....	701
The quarter centennial of the experiment station system.....	708

VOLUME 28

A closer union of agricultural libraries.....	1
Practical experience as a part of the agricultural course.....	101
The agricultural appropriation act, 1913-14.....	301
The retirement of Secretary Wilson.....	307
The coordination of State agricultural institutions.....	401
The agricultural engineer and some of his opportunities.....	601
Increasing interest in agricultural meteorology.....	701
Opportunity for study of the meteorological conditions of plant environment.....	706

VOLUME 29

Fourth session of the General Assembly of the International Institute of Agriculture.....	1
The Tenth International Congress of Agriculture.....	101
The quarter centennial of Prof. Thorne's directorship.....	106
Fiftieth anniversary of the American Veterinary Medical Association.....	301
The administrative management of the modern station.....	401
The moral of 25 years.....	404
The essentials of research.....	406
Convention of Association of Agricultural Colleges and Experiment Stations.....	601
Closer relations between the Department of Agriculture and experiment stations.....	604
Research, experiment, and demonstration.....	701
The essentials of research.....	702
Lines of demarcation between experiment and demonstration.....	707

VOLUME 30

	Page
The letters and writings of Dr. S. W. Johnson.....	1
Rediscovered ideals for agricultural investigation.....	5
Progress of studies in animal nutrition.....	101
Requirements of feeding experiments.....	103
Need of redirection of experimental work in animal husbandry.....	106
The "Village Moderne" at the Ghent Exposition.....	301
The opportunity of the agricultural college for civic betterment.....	305
Journal literature of agricultural science.....	401
The essentials of a scientific paper.....	403
Functions of criticism in agricultural science.....	407
The agricultural extension act.....	601
State and National cooperation in agricultural extension.....	605
The Louisville conference on country-life development.....	608
Rural sanitation—an opportunity for extension work.....	701

VOLUME 31

The agricultural appropriation act, 1914-15.....	1
Formation of the American Association of Agricultural College Editors.....	101
Sixth session of the Graduate School of Agriculture.....	301
The United States and Canadian commissions on vocational training and some of their conclusions as to agricultural education.....	401
An agency for the publication of agricultural research.....	601
The organization of a section for agriculture in the American Association.....	604
Plant physiology in agricultural courses.....	701
Study of the life of the plant in field experiments.....	704

VOLUME 32

The Washington convention.....	1
Some effects of extension development.....	4
Renewed importance of agricultural research.....	6
The new Section of Agriculture in the American Association.....	101
Some aspects of the field of rural economics.....	105
The habit of concentration.....	301
The qualities and conditions of research.....	302
A plea for the small laboratory.....	306
The agricultural appropriation act, 1915-16.....	401
A notable contribution to station literature.....	601
The need of constructive ideals in research.....	603
Economic aspects of experiment station work.....	701
Experimental inquiry and economic inquiry.....	703
Relation of the experiment stations to studies in rural economics.....	706

VOLUME 33

Establishment of the States Relations Service.....	1
Review of the Office of Experiment Stations.....	2
Progress in the organization of agricultural extension work under the Smith-Lever Act.....	101
Some administrative problems being encountered.....	102
The Berkeley convention of the Association of American Agricultural Colleges and Experiment Stations.....	301
The preparation of men for teaching and research in agriculture.....	303
The effective correlation of station and extension work.....	306

	Page
Some other problems before the association.....	307
Some problems in publishing experiment station work.....	401
The practice of outside publication.....	403
The need of a systematic procedure.....	405
The element of chance in agricultural experimentation and investigation ..	601
Fourth Convention of the International Association of Dairy and Milk Inspectors.....	701

VOLUME 34

Seventeenth Annual Convention of the Association of Southern Agricultural Workers.....	1
The more effective coordination of experiment station work.....	2
Dedication of memorial to Col. W. H. Hatch.....	8
Experience v. investigation in agriculture.....	101
The basis for agricultural extension and demonstration.....	104
Interpretation of experiment station work through extension.....	109
Dr. E. W. Hilgard, deceased.....	301
Agriculture at the Second Pan American Congress.....	303
Science and common sense.....	401
The growth of the science spirit.....	404
Establishment of a Division of Agricultural Meteorology in the United States Weather Bureau.....	601
Recent progress in agricultural meteorology.....	604
The experiment station as a field for the research worker.....	701

VOLUME 35

Impressions of the stations in the Southwest.....	1
Rural credits legislation in its relation to the agricultural colleges and experiment stations.....	101
The Federal farm loan act.....	104
The agricultural appropriation act, 1913-17.....	301
Seventh Graduate School of Agriculture.....	401
Agriculture and the war in Europe.....	601
Effect of the war on agricultural institutions.....	605
The Washington Convention of the Association of American Agricultural Colleges and Experiment Stations.....	701

VOLUME 36

The New York meeting of the American Association for the Advancement of Science.....	1
The adjustment of science to practice.....	2
Qualities and organization of research and experiment.....	5
Coordination in scientific effort.....	7
The training of investigators.....	101
Graduate students as research assistants.....	103
Physics in agricultural investigation.....	106
A decade under the Adams Act.....	301
The agricultural appropriation act, 1917-18.....	401
The experiment stations and the war.....	601
The coordination of science and practice in agriculture.....	604
The Federal Aid Vocational Education Act.....	701

VOLUME 37

	Page
The response of the experiment stations to the present emergency.....	1
The adjustment of theory and practice to war conditions.....	4
Adequate station administration.....	101
Some tendencies under deficient administration.....	105
The Federal food production act.....	301
Research and the research worker in relation to national affairs.....	401
The development of American technical agricultural journals.....	405
The thirty-first annual convention of the Association of American Agricultural Colleges and Experiment Stations.....	601
Attendance at the agricultural colleges as affected by the war.....	701

VOLUME 38

The opportunity for individual service.....	1
Helping to win the war.....	4
Closer relation of station and extension forces.....	6
An agricultural program.....	101
The regulation of agriculture abroad.....	102
"Speeding up" food production in England.....	107
Report of the commission on the investigation of agricultural education in Massachusetts.....	301
Agriculture under reconstruction.....	401
The place of the experiment stations in a reconstruction program.....	405
A decade of development of the insular experiment stations.....	601
Proposed station work in the Virgin Islands.....	608
The first decade of the International Institute of Agriculture.....	701

VOLUME 39

The development of agricultural research in Australia.....	1
Scientific activity as a national asset.....	101
Responsibility for the development of science.....	104
The agricultural appropriation act, 1918-19.....	301
Reconstruction measures in Great Britain.....	401
The outlining of an agricultural policy.....	402
A new attitude toward cooperation and coordination.....	601
The organization of science for research.....	603
The thirty-second annual convention of the Association of American Agricultural Colleges and Experiment Stations.....	701

VOLUME 40

The present position and outlook of the stations.....	1
Some effects of association.....	2
The need for safeguarding agricultural investigation.....	6
The Rothamsted Station in war time.....	101
Suggestions for agricultural education and research in Victoria.....	105
Birmingham meeting of the Southern Agricultural Workers.....	301
Abstract journals after the war.....	304
The return of station workers from war service.....	401
The influence of the war on station work in the future.....	403
The organization of agricultural research work in India.....	601
Science and prophecy.....	701
Elements of progress in research.....	702
Long-continued projects.....	705

SUBJECT INDEX

NOTE.—The numbers inclosed in parentheses refer to volumes, the others to pages.

- Abacá**—
binder twine from, (27) 534.
culture and grading, (32) 828.
culture experiments, (30) 434; (36) 229.
culture in Philippines, (30) 230.
fiber, anatomy, (36) 229.
fiber, strength, (29) 313.
insects affecting, (38) 460.
production in Philippines, (39) 231.
standard grades, (36) 634.
- Abbe, C.**, biographical sketch, (35) 699.
- Abbella**—
americana n.sp., description, (38) 661.
auriscutellum n.sp., description, (34) 556.
auriscutellum n.sp., notes, (33) 357.
perditrix n.sp., description, (40) 760.
subflava, notes, (34) 66.
- Abbotana clemataria**, studies. (36) 54.
- Abderhaiden**—
protective ferments of, diagnostic value, (33) 279.
reaction, studies (34) 577, 674; (35) 73, 179; (36) 380, 381; (39) 583, 886.
test, quantitative application. (32) 372.
test, sensitization of substratum for, (33) 385.
- Abera gardnerii**, culture experiments, (31) 441.
- Abla inflata**, notes, (28) 158.
- Abies**—
balsamea as host of fern rusts, (29) 645.
concolor, length of tracheids in, (33) 143.
concolor, oils of, (33) 203.
- Ablerus**—
clisiocampae, notes, (26) 152; (27) 556; (36) 556; (37) 667.
n.sp., notes, (27) 556.
perspicuosus n.sp., description, (36) 259.
- Abney hand level**, use, (33) 393, 843.
- Abor tea**, notes, (29) 463.
- Abortin**—
as an immunizing agent, (28) 380.
diagnostic value. (29) 81, 500; (31) 380.
tests, (28) 480, 585.
therapeutic value, (34) 82.
- Abortion**—*see also* *Bacillus abortus*.
and sterility in cows, (29) 80, 81.
bacillus, *see Bacillus abortus*.
bacterium in milk, (27) 281.
bibliography, (39) 681.
blood tests, (40) 885.
control, (38) 687; (39) 681.
control in England, (36) 275.
control in Michigan, (37) 274.
control in Oregon, (37) 374.
diagnosis, (26) 585, 681; (27) 581, 582, 682; (28) 284, 379, 380, 480; (29) 586, 779; (30) 184; (31) 379, 380; (33) 284; (34) 880; (35) 681; (37) 276.
dissemination, (36) 277.
effect on milk, (33) 774.
- epizootic**—
in cattle, (29) 481.
cows, (26) 381.
domestic animals, (33) 578.
mares, (29) 281; (30) 586.
sheep, (30) 684.
- etiology, (27) 576.
immunization, (26) 578; (28) 380; (30) 184; (33) 679; (36) 481.
- in cattle, (27) 77, 287, 478, 885; (28) 585; (29) 80, 305, 500, 677, 778; (31) 285, 779; (34) 581, 782; (35) 784, 879; (36) 82, 383, 675, 676, 680, 777, 881, 882, 883; (37) 181, 482, 687, 691; (38) 179, 183, 486, 588, 684, 787, 796; (39) 81, 83, 289, 391, 491, 589, 890; (40) 86, 290, 585, 782.
cattle, treatment, (28) 781; (29) 969.
cows, (26) 381, 681, 784; (30) 280; (32) 82, 581, 677.
live stock, (26) 883.
mares, (27) 77; (35) 282; (36) 780; (39) 891.
- Abortion—Continued.**
in mares—
and cows, (39) 188.
and jennets, (34) 185.
cause, (28) 886; (31) 683; (33) 183.
immunization, (35) 80.
in Ontario, (33) 879.
studies, (31) 381.
pigs, (31) 886; (36) 483.
notes, (27) 77, 181; (31) 177; (40) 778.
papers on, (34) 184, 575.
persistence of *bacillus*, (30) 583.
prevalence in—
Canada, (36) 179.
Great Britain, (34) 382.
Rhodesia, (35) 76.
United States, (37) 274.
review of literature, (35) 884.
studies, (27) 580, 581; (29) 779; (33) 278, 384; (34) 386; (37) 779; (39) 289; (40) 184, 383.
transmission by milk, (36) 480; (37) 78, 79; (38) 286; (39) 83.
treatment, (30) 184, 279; (40) 782, 885.
vaccine for, (34) 184.
- Abrin**—
and its antitoxins, (32) 78.
in locust seeds, (30) 204.
investigations, (31) 775.
notes, (26) 676.
- Abscess formation in hogs due to vaccination**, (39) 392.
- Abscission in**—
Coleus blumei, (40) 325.
plants, (36) 225.
Solanaceae, (39) 226.
- Absinth**, notes, (27) 665.
- Absorbents**, effect on soils, (36) 214.
- Absorption**—
and evaporation, (38) 210.
and transpiration in plants, differentiation, (26) 822.
in solutions, discussion, (27) 215.
pipettes, description, (40) 308.
review of investigations, (36) 622.
test, Castellani's, (40) 288, 579.
- Abstract journals after the war**, (40) 304.
- Aburachan seed**, oil of, (37) 109.
- Abutilon**—
moth, studies, (30) 157.
mucilage of, (40) 819.
spp. as host of cotton pests, (39) 160.
theophrasti seeds, permeability, (38) 126.
- Acacia**—
ants of Central America, (31) 452.
arabica, beetles, affecting, (27) 863.
arabica, descriptive account, (38) 45.
descriptive notes, (36) 45.
false, as coffee substitute, (40) 508.
farnesiana injurious to horses, (37) 778.
galls, lycenid in, (31) 352.
gummosis, notes, (30) 543.
mollissima—
anatomy and distribution of tannin in, (33) 523.
mottling in, (33) 151.
nodules, analyses, (28) 815.
sap ascent in, (29) 524.
pycnantha seeds, nitrogen in, (34) 729.
seedlings, studies, (39) 226.
seedlings, variation in, (35) 329.
spp., analyses and digestibility, (27) 871; (32) 167.
spp. of Australia, description, (36) 844.
- Acacias**—
economic importance, (30) 146.
of South African thorn veld, (39) 525.
tannin-yielding, of Senegal, (31) 839.
- Acalloides spp.**, notes, (30) 357.

- Acalypta grisea* n.sp., description, (37) 563.
Acamatus schmitti destructive to Argentine ant, (31) 256.
Acanthaphis n.g., description, (40) 60.
Acanthia lectularia, see Bedbugs.
Acanthia linaria destructive to Chinese cotton scale, (26) 556.
Acanthocephala—
 American species, (39) 359.
 notes, (39) 892.
 parasitic in birds, (31) 184; (39) 556.
 review of studies, (31) 154.
Acanthomyops interjectus, remedies, (34) 62.
Acanthorhynchus vaccinii, treatment, (39) 749.
Acanthoscelides obtectus, see Bean weevil.
Acar—
 on brown rats, (32) 353.
 parasitic on mammals and birds in Great Britain, (37) 859.
 parasitic on rodents, (33) 159.
Acarids, new, of Italy, (38) 460.
Acarina—
 monograph, (34) 458.
 of Barbados, (40) 56.
 parasitism in, (27) 866.
Acarophenax tribolii n.g. and n.sp., notes, (40) 855.
Acaulium spp. in Norway, (31) 327.
Acaulona peruviana n.sp., notes, (29) 358.
Acapiter cooperi, notes, (27) 355.
 Acclimatization of plants, (30) 328.
 Accounting, farm, see Farm accounting.
Acer—
 macrophyllum, notes (27) 846.
 platanoideis, measurements of hypocotyl, (28) 739.
 pseudoplatanus—
 regional spread of moisture in, (40) 541.
 variations in salt content, (29) 28.
Acerates viridiflora, leaf variation in, (27) 741.
Acerbia maydis n.sp., notes, (37) 148.
Acerophagus n.spp., descriptions, (25) 858; (40) 359.
Acetaldehyde—
 in grape must, (36) 801.
 in orchard fruits, (37) 246.
 synthesis in fruits, (35) 611.
Acetamid—
 as source of ammonia, (29) 723.
 assimilation by plants, (26) 32.
 nitrification rate, (32) 124.
Acetanilid—
 determination in headache tablets, (27) 499.
 methods of analysis, (33) 413.
Acetates, determination, (37) 617.
Acetic acid—
 decomposition by sunlight, (30) 431.
 detection in ethyl alcohol, (29) 312.
 determination (33) 804; (38) 506; (39) 506.
 effect on—
 bread fermentation, (27) 268.
 calcium phosphate, (36) 712.
 hemolytic reaction, (36) 878.
 inner qualities of rubber, (37) 347.
 milk fat, (34) 507.
 Penicillium glaucum, (26) 203.
 rotatory power of sucrose and invert sugar, (37) 802.
 in silage, (27) 205; (28) 608.
 manufacture on rubber estates, (38) 715.
 preparation from corncobs, (40) 17.
 production from wood, (28) 50.
 rôle in digestion, (36) 763.
 toxicity, (28) 661.
 Acetic ether as soil disinfectant, (31) 621.
 Acetin as butter adulterant, (26) 508.
Acetone—
 alcohol, nature and use, (26) 580.
 determination, (39) 311.
 effect on hemolytic reaction, (36) 878.
 in milk, (35) 202.
 production from wood, (28) 50.
 sterilization of soils by, (32) 816.
 waste products as source of lime, (38) 22.
Acetyl—
 group, occurrence in lignin, (27) 310.
 number of oils, determination, (31) 713.
Acetylene—
 detection, (34) 714.
 for small lighting plants (28) 788.
 gas, effect on plants, (27) 826.
Acetylene—Continued.
 gas for heating and lighting, (38) 190.
 gas for mange parasites, (35) 279.
 waste products as source of lime, (38) 22.
Achaeta moria, notes, (31) 58.
Acherontia lachesis, studies, (40) 62.
Achetoidea of South America, (37) 157.
Achillea millefolium, volatile oil of, (35) 807.
Achlya sp., reproduction in, (38) 225.
Achoreutes armatum, notes, (27) 658; (36) 854.
Achorion—
 quinckeum infection, studies, (40) 583.
 schönleini, studies, (40) 483.
Achorutes viaticus, biology, (32) 552.
Achraea griseola, immunity to tuberculosis, (31) 155.
Achras, ripening processes of, (26) 310.
Achroodextrinase, bacterial, preparation, (37) 411.
Achrysocharella albitibiae n.sp., description, (37) 667.
Achrysocharella in North America, (36) 557.
Acid—
 accumulation and destruction in large succulents, (34) 730.
 albumin, production of anaphylaxis by, (26) 374.
 amids, ammonification in soils, (32) 718.
 amids as sources of ammonia in soils, (29) 723.
 amids, behavior in soils, (28) 813.
 amins, determination and transformation in soils, (31) 515.
 excretion—
 as affected by water drinking, (34) 763.
 during fasting, (30) 764.
 of roots, (27) 514.
 studies, (29) 62.
 phosphate, see Superphosphate.
 reaction on milk, (27) 810.
Acidia heraclei, notes, (33) 860, 862.
Acidimetric—
 solutions, standardization, (31) 501.
 titrations, indicator for, (39) 807.
Acidimetry—
 indicator for, (36) 13.
 of chlorinated solutions, (39) 506.
 of colored solutions, (39) 503.
Acidity—
 as test for flour, (33) 64.
 determination in—
 flour, bread, etc., (33) 14.
 milk, (26) 113; (32) 606.
 potatoes, (34) 807.
 silage, (30) 415.
 soil, see Soil acidity and Soils, acid.
Acidosis—
 and creatinuria, (40) 765.
 catalase in, (38) 870.
 causes, (35) 473.
 effect on creatin elimination, (36) 161.
 in omnivora and herbivora, (32) 566; (33) 368; (34) 261.
 studies, (34) 462, 763.
Acids—
 absorption by plant tissue, (37) 433.
 alkaline reaction in soils, (30) 122; (34) 720; (37) 18.
 amino, see Amino acids.
 and salts, antagonism between, (34) 429.
 as affected by humus acid, (34) 324.
 detection in cheese, (32) 313.
 determination in—
 cane juice, (27) 814.
 fruit juices, (39) 107.
 oils and fats, (26) 411.
 soils, (28) 708.
 effect on—
 activity of sucrase, (27) 803.
 Aspergillus niger, (27) 848; (29) 734.
 bread fermentation, (27) 268.
 catalase of taka-diastase, (31) 13.
 concrete, (29) 184.
 denaturation rate of proteins, (29) 502.
 growth of rice, (34) 31.
 lime requirements of soils, (36) 210.
 malt diastase, (31) 806.
 metabolism of pigs, (30) 268.
 permeability, (34) 429.
 plants, (37) 224.
 rotatory power of sucrose and invert sugar, (37) 802.
 seed germination, (26) 131; (36) 29.

- Acids—Continued.
 effect on—continued.
 soil bacteria, (37) 213.
 soil granulation, (26) 420.
 excretion by roots, (37) 222; (39) 27.
 fatty, see Fatty acids.
 hydrolyzing power in presence of invertase, (30) 806.
 importance in digestive processes, (31) 772.
 inhibition of oxidase activity by, (37) 9.
 "l'éclair bleu" test, (40) 311.
 localization in fleshy fruits, (25) 226; (36) 110.
 mineral, action on natural phosphate rock, (36) 711.
 monoamino, detection in presence of polypeptides, (27) 410.
 monobasic, as affected by Bulgarian ferment, (26) 203.
 nonvolatile, of butter, refraction, (27) 312.
 of agricultural products, identification, (40) 13.
 fruit wines, (37) 310.
 honey, (28) 166.
 humus, (33) 609.
 organic, action on pepsin, (36) 763.
 organic, as affected by fungi, (27) 526.
 organic, effect on—
 carbon assimilation of plants, (27) 525.
 fungi, (26) 203.
 respiration of seeds, (27) 729.
 tin, (26) 867.
 wheat bread, (27) 462.
 organic—
 humification, (38) 26.
 in soils, (32) 718.
 reactions of ions and molecules, (37) 201.
 rôle in—
 digestion, (36) 763.
 germination of seeds, (29) 26; (30) 521.
 toxic inorganic, effect on plant growth, (30) 130.
 toxicity, (28) 661.
 vegetable, toxicity, (28) 443.
 volatile—
 aliphatic, of silage, (28) 608, 609.
 determination, (37) 803.
 determination in wine, (36) 112.
 fatty, determination, (36) 506; (37) 13, 413; (38) 504.
 fatty, distillation, (33) 414.
 fatty, effect on milk secretion, (32) 471.
 fatty, variation in milk fat, (30) 272.
 formation after fermentation, (27) 223.
 in honey, (26) 25; (27) 112.
 in ripening cheese, (28) 879.
 production by anaerobic bacteria, (33) 30.
 Acidum nucleicum, nature and use, (26) 580.
 Acne in horses, treatment, (33) 286.
 Acocephalus—
 spp., life histories, (35) 553.
 striatus, notes, (33) 356.
 Acokanthera venenata, notes, (35) 678.
 Aconitum columbianum, description, (39) 386.
 Acontia delecta, studies, (40) 754.
 Acontianae in British Museum, catalogue, (28) 856.
 Acorn poisoning in cattle, (26) 586.
 Acorns—
 analyses, (26) 371, 872; (38) 410.
 analyses and feeding value, (31) 365.
 composition and digestibility, (27) 669.
 drying, (27) 669.
 feeding value, (30) 169; (32) 566; (38) 168.
 for fowls, (35) 172.
 germinating, (36) 242.
 storage in winter, (29) 343.
 tannin-colloid complex in, (28) 528.
 Acorus calamus, oils of, (34) 407.
 Acremonium alternatum, notes, (32) 843.
 Acremonium sp., notes, (28) 733.
 Acridians—
 injurious in Nova Scotia, (37) 156.
 insect enemies of, (32) 848.
 Acrididae—
 egg-laying habits, (39) 656.
 injurious in north Georgia, (36) 252.
 of Minnesota, (31) 650; (32) 753.
 of Nova Scotia, (38) 156.
 Acridiinae, notes, (27) 858.
 Acridity in plants, (34) 731.
 Acridium peregrinum, see Locusts, migratory.
 Acridoidea, South American, notes, (27) 55.
 Acriflavin, antiseptic value, (39) 680; (40) 182.
 Acrobasis—
 caryae, notes, (28) 554; (40) 259.
 nebulella, studies, (38) 656.
 spp. affecting pecan, (38) 157, 762; (39) 557.
 spp., notes, (38) 256.
 Acrocercops cramerella—
 notes, (29) 855.
 relation with cacao ant, (39) 156.
 Acrocercops—
 sp., notes, (31) 849.
 strigifinitella, see Neurobathra strigifinitella
 Acroceridae of North America (40) 757.
 Acrocomia sclerocarpa, oil content, (31) 234
 Acrocystis batatae—
 notes, (33) 347.
 studies, (34) 156; (36) 544.
 Acropteron rufipes, notes, (32) 352.
 Acroptilon piceis, notes, (32) 436.
 Acrostalagmus—
 albus, description, (33) 459.
 caulophagus n.sp., description, (28) 348.
 sp. on maples, (33) 249, 544.
 sp., relation to potato stem lesions, (39) 649
 Acrylic acid, isolation from soils, (28) 418.
 Actia pilipennis—
 biology, (39) 658.
 notes, (35) 659.
 Actinidias, Asiatic, notes, (28) 841.
 Actinomycetes—
 albo-roseus, notes, (31) 15.
 chromogenus—
 as affected by acidity, (40) 644.
 as affected by cold, (34) 538.
 notes, (40) 844, 847.
 relation to temperature, (33) 245.
 studies, (32) 546; (33) 547.
 treatment, (39) 755.
 in limed cranberry soils, (40) 214.
 lanfranchii, studies, (37) 482.
 melanocyclus, notes, (31) 14.
 odorifera, notes, (26) 881.
 penicilloides n.sp., studies, (40) 721.
 pheochromogenus n.sp., description, (37) 517.
 poolensis n.sp., association with Cytospora batata, (39) 456.
 scabies, notes, (30) 748.
 scabies, studies, (36) 847.
 sp. in Norway, (34) 226.
 spp., proteolytic activity, (40) 721.
 Actinomycetes—
 as affected by inorganic salts, (36) 526.
 function in soils, (35) 525; (36) 518.
 in soils, (29) 222; (37) 517.
 nitrogen transformations in, (31) 324.
 pathogenic, studies, (40) 478.
 Actinomycosis—
 acute, in horses, (26) 787.
 bovine, notes, (34) 782.
 bovine, pathology, (35) 488.
 in cattle, (29) 886.
 in South American ox tongues, (31) 882.
 notes, (32) 781.
 of the mammary gland in dairy cattle, (30) 884
 of the rectum in horses, (27) 86.
 Actinonema rosae—
 notes, (29) 552; (30) 537; (37) 348.
 perfect stage of, (26) 650; (28) 449.
 treatment, (27) 747; (38) 453.
 Actinopelte japonica (?) on oak, (33) 250.
 Actaria spp. parasitic in fowls, (31) 184.
 Acucula saltans n.g. and n.sp., description, (30) 159.
 Aeythoepus—
 citrulli n.sp., description, (35) 365.
 gilvonotatus n.sp., description, (40) 655.
 orchivora, notes, (40) 754.
 Adalia—
 bipunctata—
 negative geotropism of (30), 357.
 notes, (30) 657.
 studies, (39) 663.
 spp., life history, (33) 562.
 Adams Act—
 administering fund, (28) 639.
 decade of work under, (36) 301.
 research at Cornell, (28) 639.
 Adansonia digitata, fiber from, (37) 534.
 Adelenyrtus odonaspis n.sp., notes, (29) 253.
 Adelphocoris rapidus, notes, (33) 352, 744.
 Adelura apii, notes, (33) 862.
 Adelura gahani n.sp., description, (38) 264.

- Adenin—
 antineuritic properties, (40) 271.
 in cow's milk, (37) 308; (38) 506.
 hops, (32) 502.
 molasses, (29) 614.
 mulberry leaves, (31) 203.
 rice polishings, (33) 167.
 soils, (28) 418.
 tea, (31) 358.
- Adenitis, caseous, in swine, (37) 82.
- Adenosin, metabolism of, (32) 256.
- Adia genitalis, notes, (31) 852; (34) 449.
- Adipocere, composition, (37) 309.
- Adipose tissue, histogenesis of, (26) 366.
- Adisura atkinsoni, notes, (38) 359.
- Adjab fat, detection, (29) 613.
- Adobe as building material, (27) 599.
- Adonite as source of carbon for molds, (30) 226.
- Adoretus—
 spp., notes, (29) 858.
tenuimaculatus in Hawaii, (34) 59.
umbrosus, remedies, (38) 842.
vestitus in Samoan Islands, (33) 158.
- Adoxus obscurus, *see* Grape root worm.
- Adrenal functioning; dependence on pituitary secretion, (29) 882.
- Adrenalin—
 determination in blood, (29) 408.
 effect on milk production, (37) 173, 272.
 effect on sex determination, (28) 63.
 neutralization of tetanus antitoxin by, (30) 479.
 use against milk fever, (26) 580.
- Adrenals, effect on diabetic metabolism, (33) 754.
- Adsorption—
 phenomena, review of investigations, (35) 432.
 use in biochemical analysis, (29) 408.
- Adults and infants, digestion in, (34) 167.
- Advisory Board of American Plant Pathologists, (40) 698.
- Adzuki beans—
 description, (31) 739.
 for classroom work in genetics, (37) 831.
 notes, (26) 362.
 studies, (40) 131.
 varieties, (26) 829.
- Aecidium—
blasdaleanum on pome fruits, (31) 150.
callistephi n.sp., description, (34) 242.
clematidis, effect on leaves of host, (37) 549.
enceliae n.sp., from the Andes, (40) 133.
gossypii, notes, (40) 154.
gossypii, studies, (38) 149.
grossulariae, notes, (33) 647.
 index of species, (29) 749.
lactucae sativae, notes, (30) 448.
myricatum and *Gymnosporangium ellisii*, identity, (32) 341.
sorbi and *Uredo nootkatensis*, identity, (35) 844.
 sp. on pomaceous hosts, (31) 345.
 spp., telial stages, (36) 245.
tubulosum and *A. passifloricola*, studies, (40) 344.
- Aedes—
 argenteus—
 as carrier of dengue fever, (39) 263; (40) 552.
 development in relation to bacteria and yeasts, (37) 763.
 distribution and bionomics, (27) 656.
 eggs, vitality, (39) 157.
 in Russia, (33) 749.
 notes, (28) 254; (29) 656; (35) 258, 361.
 studies, (29) 252.
 new, of California, (36) 552.
scutellaris, studies, (29) 252.
 spp., notes, (28) 254; (38) 766.
sylvestris as anthrax carrier, (39) 161.
- Aegeria—*see also* Sesia.
exitiosa, *see* Peach borer.
tipuliformis, *see* Currant borer.
- Aegerita webberi—
 description, (33) 459.
 notes, (26) 350, 860.
- Aegilops—
 and *Triticum*, hybrids of, (30) 341.
 ovata, chromosome numbers in, (27) 636.
 ovata, relation to cultivated wheat, (32) 131.
 spp., relation to wheat mildew, (35) 651.
- Aelia germari cognata, notes, (30) 854.
- Aelia rostrata, notes, (35) 56.
- Aenasioidae—
laticapus n.g. and n.sp., description, (26) 254.
 n.spp., descriptions, (35) 858.
- Aenoplegimorpha phytonomi—
 n.sp., description, (29) 563.
 notes, (27) 561.
- Aenoplex—
carpocapsae, notes, (38) 565.
 n.spp., descriptions, (35) 262.
nigrosoma n.sp., description, (38) 565.
plesiotypus, notes, (38) 565.
 sp., studies, (26) 458.
- Aeolopus bruneri, remedies, (34) 159.
- Aeolothripidae, synopsis, (31) 452.
- Aeolothrips—
 bicolor, notes, (28) 250.
fasciatus, notes, (28) 250, 452.
floridensis n.sp., description, (37) 561.
 North American species, (37) 561.
vitis, notes, (32) 754.
- Aeration of soils, *see* Soils, aeration.
- Aerial contamination in amebic infections, (26) 677.
- Aero-electric plant, construction, (34) 191.
- Aerological—
 observations, (40) 19, 209, 715.
 research in Canada, (35) 618.
 Station, Drexel, (36) 419.
- Aerology, standard units in, (31) 615.
- Aerostatic hairs of lepidopterous larvae, (30) 55.
- Aeschynomene—
americana, culture, (34) 736.
indica as a green manure, (38) 234.
- Aesotes leucurus, notes, (27) 60.
- Afermol, nature and use, (26) 580.
- Afforestation, *see* Forestation.
- African coast fever—
 blood observations in, (36) 479.
 complement fixing in, (26) 882.
 immunization, (26) 173, 683, 882; (29) 284, 476; (31) 585; (32) 273; (35) 678.
 investigations, (26) 678.
 notes, (28) 478; (34) 879.
 transmission, (26) 882; (29) 584; (30) 79.
 treatment, (33) 478.
- African horse sickness—
 immunization, (26) 579.
 transmission by *Stomoxys calcitrans*, (28) 756.
- Agalactia, contagious—
 in goats, (39) 492.
 in goats and sheep, (29) 179; (30) 584; (31) 884; (40) 782, 783.
- Agallia sanguinolenta—
 notes, (27) 858.
 remedies, (35) 465.
- Aganella larvalis n.g. and n.sp., description, (30) 55.
- Aganoidae of Australia, (39) 154.
- Agar—
 agar—
 ash analyses, (29) 861.
 for bacteriological use, (36) 131.
 Japanese, chemical studies of algae used in, (40) 110.
 use in food products, (34) 167.
 anaphylatoxin, studies, (37) 579.
 effect of intravenous injections, (37) 580.
 nutritive value and use, (36) 864.
 plates, filling and inoculation (40) 805.
 plates, photographic records, (40) 881.
 sources, preparation, and composition, (36) 716.
- Agaricus—
 campestris—
 composition, (30) 804.
 effect on red blood corpuscles, (30) 879.
 nutrition, (26) 440.
 maximus, notes, (31) 247.
 melleus, notes, (26) 750; (35) 155; (40) 749.
 mucidus, notes, (27) 51.
 muscarius, precipitating serum for protein^o (30) 880.
 tabularis, effect on vegetation, (38) 222.
- Agathi weevil, egg-laying habits, (38) 359.
- Agati grandiflora, notes, (29) 652.
- Agave—
americana, composition, (40) 710.
anthracnose, notes, (29) 346.
 diseases, notes, (28) 850; (31) 54.
 fibers of Tunis, (37) 535.
rigida sisilana, culture in Sicily, (34) 227.
sisilana, leaf disease of, (35) 846.

- Agave—Continued.
 spp., binder twine from, (27) 534.
 spp., fibers, strength of, (29) 313.
- Agaves—
 culture in India, (28) 634, 736.
 feeding value, (40) 276.
 fiber-producing, description, (38) 529.
 fodder from, (30) 371.
 frozen, as affected by rapid thawing, (32) 43.
 in West Indies, (30) 526.
 manufacture of alcohol from, (26) 415.
 of Durango, Mexico, (31) 132.
 studies, (27) 33.
 treatise, (33) 131.
- Agchylostoma duodenale, anatomy and life history, (32) 759.
- Age—
 as a factor in animal breeding, (31) 367; (33) 265.
 relation to fecundity, (28) 767; (40) 468.
- Agelaius—
 phoeniceus, environment, life history, and ecology, (32) 151.
 spp., destruction of locusts by, (28) 351.
- "Agelarine," notes, (37) 744.
- Agelastica—
 (Galeruca) alni, notes, (28) 554.
 sp., notes, (27) 453.
- Ageniaspis fuscicollis, parasitism, (31) 458.
- Agglutinating principle in blood of transfused rabbits, (39) 584.
- Agglutination—
 acid, of bacteria, (27) 384.
 effect of sodium chloride on, (40) 778.
 notes, (32) 78.
 reaction, mechanism, (37) 376.
 reaction, notes, (30) 204.
 reactions in hog cholera, (26) 785; (27) 289, 384.
 studies, (40) 82.
 technique and methods, (26) 676.
 test—
 diagnostic value for abortion, (29) 586.
 rapid method, (39) 887.
 standardizing reports, (38) 78.
- Agglutinin—
 disappearance from blood of anaphylactic and normal animals, (37) 76.
 from beans, (37) 81.
- Agglutinins, experimental production in animals, (30) 878.
- Aggregata eberthi, chromosome cycle, (34) 458.
- Aggregates, road, *see* Road materials.
- Aglaophenia helleri, biometrical study, (26) 162.
- Aglycyderidae, catalogue, (26) 560.
- Agoutis, new, from Panama and Nicaragua, (37) 757.
- Agrarian—
 matters, treatise, (29) 391.
 problem in Mexico, (34) 489.
 protection in Belgium, (26) 93.
 reforms in Russia, (30) 192.
 system in England, treatise, (32) 793.
- Agrarianism, treatise, (31) 93.
- Agria affinis, studies, (29) 760.
- Agricere of soils, notes, (27) 621.
- Agricultural—
 activities of Jews in America, (29) 89.
 adviser, work and value, (38) 594.
 agencies, consolidation in British West Indies, (26) 495.
 agencies in Peru, reorganization, (26) 698.
 and live stock producers, advisory committee, report, (39) 295.
 and mechanical society of South Carolina, history, (36) 688.
 apprenticeships, notes, (28) 296.
 appropriations in New York State, (30) 199.
 arithmetic, notes, (27) 898.
 arithmetic, textbook, (30) 795; (36) 597; (37) 95, 297.
 associations—
 cooperative, (38) 796.
 in Bavaria, (34) 391, 392.
 Canada, (33) 93.
 France under war conditions, (35) 693.
 Germany, (26) 15.
 Great Britain, (30) 391.
 Italy, (33) 92.
 Netherlands, (27) 798; (31) 596; (33) 790.
 Northern Europe, (27) 590.
 United States, (34) 290.
- Agricultural—Continued.
 associations—continued.
 of Mohammedans of Maghreb, treatise, (30) 593.
 bank of Philippines, (36) 689.
 banking in Burma, (39) 594.
 banks in Pennsylvania, (27) 389.
 banks in South Africa, (39) 594.
 benevolent institution in England, (27) 795.
 botanical experiment station at Tabor, report, (28) 414.
 botany institute at Cambridge, (39) 700.
 budget of Russia, (30) 799.
 capital, benefits of, (28) 292.
 chemical—
 institute at Bern, report, (30) 618; (37) 311.
 institute at Zurich, report, (27) 413.
 institutions, organizations, (31) 790.
 laboratory at Udine, Italy, report, (29) 119.
 station at Vienna, report, (26) 95.
 stations of Austria-Hungary, report, (28) 414.
 chemistry, *see* Chemistry.
 chemists, training, (31) 790.
 clubs—
 decline in Oklahoma, (36) 94.
 for boys, (33) 599.
 for boys and girls, (27) 898; (28) 194; (29) 394, 395.
 in California, (38) 792.
 high schools, (31) 96; (33) 94.
 high schools of Utah, (30) 794.
 Massachusetts, (30) 597; (34) 394.
 Michigan, (30) 794.
 New England, (29) 695.
 Ohio, (31) 96.
 Pennsylvania, (31) 393.
 Poland, (31) 690.
 West Virginia, (31) 297.
 junior, formation, (28) 792.
 junior, in Oklahoma, (27) 395.
 organization, (31) 499; (33) 196.
 suggestions for, (31) 793.
 collections for school laboratories, (33) 899.
 college—
 at Uckfield, England, closing, (34) 498.
 editors, American association of, (31) 101, 199.
 graduates, occupation, (26) 601.
 in Alaska, (32) 499.
 Ceylon, (30) 200.
 Devonshire, (28) 399.
 news service, development, (28) 11.
 of Philippines, (40) 499.
 colleges—*see also* Alabama, Arizona, etc.
 administrative organization, (40) 690.
 and experiment stations, relation, (27) 490.
 state normal schools, relation, (31) 896.
 state universities, duplication in, (33) 194.
 state universities, functions and relations, (39) 497.
 the farmer, (40) 396.
 appointment and tenure of instructors in, (32) 195.
 as leaders in civic betterment, (30) 305.
 attendance as affected by the war, (37) 701.
 botany in, (32) 393.
 cooperation with public schools, (26) 296.
 cost of instruction in, (32) 12.
 courses of study in, (28) 8; (29) 393; (33) 895.
 effect on higher education, (27) 605.
 entomology in, (30) 298.
 entrance requirements, (38) 795.
 extension work in, (32) 195, 196.
 forestry in, (26) 15.
 genetics in, (29) 769.
 grouping of studies in, (26) 10.
 home economics in, (32) 690.
 in Canada, age limit of students, (39) 199.
 in United States, statistics, (27) 797; (29) 897; (35) 394.
 increasing usefulness, (28) 791.
 laws concerning, (32) 496; (35) 94; (36) 598; (38) 95.
 military instruction in, (32) 11, 194.
 military legislation affecting, (35) 599.
 organization and policy, (39) 708.
 organization lists, (26) 795; (28) 691; (31) 599; (34) 94; (36) 794; (39) 497.
 preparation of teachers by, (28) 97; (39) 595.

Agricultural—Continued.

- colleges, relation to—
 - experiment stations and extension work, (31) 196.
 - military training, (39) 708.
 - other institutions, (28) 90.
 - reconstruction problems, (39) 702.
 - rural and secondary schools, (32) 11.
 - United States Department of Agriculture, (32) 194.
- colleges—
 - response to war conditions, (37) 1, 603.
 - retiring allowances for, (32) 195.
 - rôle in rural life, (27) 595.
 - short courses in, (34) 297.
 - statistics, (28) 691; (33) 193; (38) 91.
 - technical subjects in, (31) 800.
 - treatise, (36) 791.
 - tropical, notes, (31) 297.
 - unprepared teachers in, (27) 490.
 - war emergency work, (40) 294.
 - work and expenditures, (36) 794.
- colonization—*see also* Land settlement.
 - in Ontario, (27) 794.
 - of Tripoli, (37) 791.
- commerce, instruction in, (32) 393.
- commerce, textbook, (34) 595.
- Commission to Europe, report, (40) 493.
- committees of bankers' associations, (27) 399.
- communities, eugenics in, (40) 193.
- communities, social survey of, (33) 394.
- competitions for boys and girls, (33) 196.
- competitions in Canada, (33) 697.
- conditions—
 - in Denmark, (29) 295.
 - Dresden, (28) 594.
 - Europe, (39) 703.
 - France, Department of Corrèze, (37) 92
 - French Alps, (29) 190.
 - Great Britain and Ireland, (32) 193.
 - Litchfield Co., Connecticut, (38) 191.
 - Michigan, southern peninsula, (28) 422.
 - military zone of France, 1916, (39) 795.
 - Norway, (31) 491.
 - United States, (28) 387.
- conference in New York, (33) 199.
- contests, (29) 93, 299.
- contests in Wisconsin, (28) 92.
- contracts in Finland, (38) 392.
- cooperation—
 - advantages, (29) 894.
 - as aid in war situation, (39) 795.
 - bibliography, (29) 89.
 - consumer's view of, (31) 594.
 - ethical principles, (26) 291.
 - examples of, (37) 594.
 - handbook, (26) 92.
 - in Argentina, (29) 895.
 - Australia, (40) 592.
 - Belgium, (40) 688.
 - Bengal, (36) 593; (37) 291.
 - Bihar and Orissa, (36) 689; (40) 893.
 - Bombay Presidency, (26) 190; (32) 593.
 - Brazil, (30) 391.
 - British Columbia, (32) 593.
 - Canada, (40) 193, 489, 688.
 - Denmark, (28) 593; (36) 392; (39) 192; (40) 689.
 - England and Wales, (27) 191.
 - Europe, (29) 691; (30) 492; (31) 192, 593; (33) 394, 592, 593; (34) 91.
 - Finland, (38) 191.
 - France, (27) 92; (40) 92, 93.
 - Germany, (28) 296; (33) 295, 693.
 - Great Britain, (26) 895.
 - Holland, (29) 693.
 - Hungary, (30) 492.
 - India, (31) 593; (34) 894.
 - Ireland, (27) 295, 891; (28) 593; (30) 693; (40) 91.
 - Italy, (40) 389.
 - Kansas, (33) 694.
 - Massachusetts, (30) 192.
 - Minnesota, (29) 392; (32) 688; (38) 190.
 - Netherlands, (31) 596.
 - New England, (31) 389.
 - New Jersey, (26) 895; (27) 591; (29) 392; (40) 592.
 - New York, (29) 692.

Agricultural—Continued.

- cooperation—continued.
 - in North Carolina, (30) 390; (32) 489; (33) 491.
 - Ohio, (31) 593; (32) 192.
 - Ontario, (40) 193.
 - Pennsylvania, (27) 389.
 - Punjab, (30) 391; (40) 592.
 - Russia, (33) 491; (39) 191.
 - Saskatchewan, (34) 91; (37) 191; (38) 90; (40) 489.
 - South Africa, (40) 93.
 - Spain, (33) 787.
 - Suffolk, (40) 592.
 - Switzerland, (27) 894; (33) 394; (37) 392.
 - Tennessee, (26) 795.
 - Texas, (30) 591; (40) 893.
 - the South, (27) 389.
 - United Kingdom, (26) 894; (27) 794; (28) 895.
 - United States, (26) 92, 894; (36) 689; (37) 888; (38) 595; (40) 489, 591.
 - various countries, (27) 590; (35) 893.
 - Vermont, (36) 92.
 - Wisconsin, (28) 593, 895; (38) 293.
- laws in New York, (40) 389.
- notes, (29) 692; (30) 792; (31) 294, 490, 894; (32) 191, 892.
- organizing, (35) 296.
- papers on, (26) 388; (27) 793; (28) 96; (29) 595; (34) 288, 391; (35) 893.
- relation to European war, (33) 491.
- requisites of, (26) 594.
- State control of, (31) 593.
- suggestions for, (33) 491.
- treatise, (28) 487, 790; (29) 89, 188, 294, 595; (30) 191; (31) 389; (32) 792; (33) 694; (38) 190; (40) 591.
- value, (27) 690.
- yearbook, (30) 693; (31) 593.
- cooperative associations—
 - in New England, (28) 688.
 - in New York, (32) 287.
 - law, (35) 296.
 - law in Indiana, (29) 294.
 - notes, (37) 492.
 - organizing, (32) 287, 489.
- cooperative—
 - credit societies in Punjab, (26) 389.
 - law in Wisconsin, (26) 488.
 - organizations, (32) 792; (38) 895.
- cooperative societies—
 - benefits, (26) 388.
 - in Bengal (35) 794.
 - Bihar and Orissa, (36) 290.
 - Bombay Presidency, (35) 589; (37) 91.
 - France, (26) 388.
 - Germany, (26) 92.
 - Mexico, (26) 594.
 - United Kingdom, (27) 192, 894.
- Council of Nebraska, (28) 498.
- course for—
 - elementary schools, (26) 392; (27) 298, 897; (28) 298.
 - grammar school grades, (26) 493.
 - high schools, (26) 191; (27) 297; (29) 91; (30) 196, 393, 496, 597.
 - rural schools, (29) 192; (30) 393, 394.
 - women, (30) 298.
- courses—
 - disrespect of students for, (37) 893.
 - for high schools, (31) 493, 692.
 - public schools, (31) 896.
 - secondary schools, (32) 897.
 - teachers, (30) 93; (33) 195.
 - teachers in Canada, (38) 297.
 - in colleges, (39) 193.
 - high schools, (28) 898.
 - secondary schools, (28) 693.
 - plant physiology in, (31) 701.
- credit—
 - address on, (27) 690.
 - association in North Carolina, (32) 489.
- credit associations—
 - in America, (28) 488.
 - in Canada, (30) 192.
 - law in Indiana, (31) 594.

Agricultural—Continued.

- credit banks—
 - functions, (28) 294.
 - in Argentina, (33) 893.
 - in France, (30) 894.
 - in Victoria, (27) 93.
 - notes, (30) 192.
 - papers on, (34) 391.
- credit—
 - benefits, (29) 91.
 - bibliography, (32) 389, 489.
 - cooperative, in Europe, (27) 93.
 - cooperative, in India, (31) 593.
 - discussion, (27) 592; (28) 594, 790.
 - Federal farm loan system, (39) 796.
 - for reclamation projects, (35) 392.
 - handbook, (26) 594; (28) 389.
 - in Almer-Merwara, (36) 392.
 - Argentina, (30) 693.
 - Australia, (35) 392.
 - Bohemia, (30) 792.
 - British Columbia, (32) 593.
 - British India, (26) 793.
 - British India and Dutch East Indies, (36) 493.
 - California, (36) 593; (37) 190.
 - Canada, (27) 894; (31) 390.
 - Denmark, (29) 295.
 - Dutch East Indies, (37) 91.
 - England and Wales, (27) 191.
 - Europe, (26) 895; (28) 9, 293; (29) 90, 294, 691, 895; (30) 296, 492; (31) 94, 389, 593; (33) 592, 593; (34) 91.
 - France, (26) 388; (27) 93; (28) 294, 488, 691; (31) 788; (36) 894; (40) 92.
 - French colonies, (31) 293.
 - German East Africa, (30) 792.
 - Germany, (27) 93, 487, 795; (28) 594; (30) 295, 493; (32) 287.
 - Hungary, (30) 492.
 - Illinois, (31) 788.
 - India, (30) 693.
 - Ireland, (32) 286, 391; (33) 191, 294.
 - Japan, (29) 188.
 - Kansas, (28) 293; (33) 92; (35) 392.
 - Mexico, (26) 594.
 - New Hampshire, (35) 90.
 - New York, (32) 391; (39) 796.
 - New Zealand, (33) 191.
 - North Carolina, (34) 792; (36) 289.
 - North Dakota, (29) 691.
 - Norway, (29) 789.
 - Ohio, (31) 593.
 - Oregon, (34) 289.
 - Philippines, (39) 496.
 - Portuguese colonies, (34) 391.
 - relation to state socialism, (40) 688.
 - Rhodesia, (27) 795.
 - Roumania, (27) 894.
 - Russia, (29) 188; (31) 390.
 - Saskatchewan, (30) 894; (34) 289.
 - Saxony, (32) 689.
 - South Africa, (40) 791.
 - South Dakota, (38) 595.
 - Spain, (32) 286; (40) 389, 890, 892.
 - Switzerland, (40) 892.
 - Texas, (30) 591; (31) 192; (32) 892; (37) 91.
 - Tuscany, (36) 392.
 - United States, (27) 487; (28) 292, 593; (29) 294, 392, 393, 491, 789, 894; (31) 94, 293, 389; (32) 194; (33) 893; (34) 90; (35) 693; (36) 289, 688, 689, 894; (37) 391, 888.
 - Uruguay, (27) 795.
 - various countries, (28) 688.
 - Washington, (34) 91.
 - Western States, (34) 690.
 - Wisconsin, (28) 593; (30) 592; (31) 893; (32) 892; (35) 589.
 - Württemberg, (29) 393.
 - institutes in southern Italy and Sicily, (30) 192.
 - laws in Saskatchewan, (38) 494.
 - laws in South Dakota, (38) 494.
 - laws in United States, (34) 489; (35) 101.
 - monograph, (30) 792.
 - notes, (29) 491; (30) 390; (31) 192, 894; (32) 390, 892.
 - organizations in Europe, (28) 689.
 - papers on, (29) 894.

Agricultural—Continued.

- credit—continued.
 - report on, (35) 296.
 - short term, in Connecticut, (38) 793.
- credit societies in—
 - Germany, (27) 590.
 - India, (34) 893.
 - St. Lucia, (40) 489.
- credit—
 - statement, (40) 389.
 - system, plan for, (39) 688.
 - treatise, (32) 892; (33) 393, 787; (40) 892.
- credit unions—
 - cooperative, in United States, (28) 191.
 - in North Carolina, (34) 495.
 - law, (35) 296.
- credit—
 - use of, (31) 389.
 - treatise, (34) 595, 894.
- Day in Ohio, (35) 299.
- demonstration, editorial on, (29) 701.
- demonstration fields for schools, (31) 793.
- department of Gold Coast Colony, (28) 794.
- depopulation in England and Wales, (32) 491.
- development—
 - factors in, (37) 189.
 - fund in Great Britain, (38) 794.
 - in German East Africa, (27) 595.
 - Massachusetts, (33) 200.
 - Nevada, (26) 599.
 - northern Ontario, (36) 697.
 - Nyasaland, (26) 829, 830.
 - United States, (32) 90.
- problem of southeastern coastal plain, (40) 91.
- work by railroads, (40) 488.
- drafting, handbook, (30) 490.
- economics, *see* Rural economics.
- education—*see also* Agricultural instruction.
 - and research in Victoria, suggestions for, (40) 105.
 - as affected by European war, (35) 599.
 - at International Congress of Agriculture, (30) 595.
 - at Pan American Scientific Congress, (38) 794.
 - at Panama-Pacific exposition, (37) 393.
 - boys' and girls' club work in, (36) 297.
 - commercial side, (27) 595.
 - coordination in Great Britain, (28) 192.
 - cultural value, (34) 897.
 - does it pay, (33) 494.
 - economics in, (26) 386.
 - Federal aid, (38) 395.
 - for dependent and delinquent boys, (26) 498; (28) 694.
 - negroes, (3) 91.
 - teachers, handbook, (32) 897.
 - women, (36) 793.
- future in United States, (39) 91.
- general and vocational, notes, (29) 191.
- government aid in England and Wales, (29) 191.
- home-project plan for, (31) 693.
- importance of, (27) 194; (33) 895.
- in America, (33) 194.
- America and England, (28) 490.
- America, anniversary, (27) 601.
- Argentina, (26) 295, 689; (27) 94; (31) 898; (35) 895; (36) 895; (37) 793.
- Arizona, (32) 595.
- Australia, (28) 297, 392; (30) 393; (33) 799, 895; (39) 194, 691.
- Austria, (27) 695.
- Bavaria, (26) 193.
- Bohemia, (33) 493.
- Brazil, (29) 100; (30) 494, 596; (35) 695; (38) 794.
- British Columbia, (32) 593.
- Bulgaria, (37) 892.
- California, (32) 288; (40) 599.
- Canada, (26) 391; (27) 597, 694; (30) 498; (31) 194; (32) 92, 289, 689, 697, 794; (33) 93, 100; (34) 696; (36) 793; (39) 194, 296.
- Chile, (28) 391.
- China, (36) 799.
- Cuba, (34) 307.
- Denmark, (29) 895; (32) 493.
- Dutch East Indies, (33) 493.

Agricultural—Continued.
education—continued.

- in England and Wales, (29) 394, 897; (30) 595, 793; (33) 596; (34), 394; (38) 295.
- England and Wales, government aid to, (26) 793; (35) 194.
- England, Lancaster County, (29) 494; (32) 289.
- Europe, (33) 194.
- Finland, (33) 396; (39) 898.
- France, (28) 691; (37) 493.
- Germany, (32) 794.
- Gold Coast, (36) 896.
- Great Britain, (32) 794; (36) 595, 798.
- Great Britain, government aid to, (28) 596.
- Greece, (31) 800.
- Grenada, (28) 793.
- India, (31) 400; (36) 896; (39) 98, 896.
- Indiana, (28) 896.
- Iowa, (37) 292.
- Italian Africa, (31) 699.
- Italy, (26) 798.
- Japan, (33) 194.
- Kansas, (33) 695.
- Latin America, (30) 98; (31) 598, 898.
- Manitoba, (33) 396; (35) 92.
- Massachusetts, (29) 596; (30) 597; (31) 693; (36) 93; (38) 301; (39) 298.
- Mexico, (39) 298.
- Michigan, (26) 192.
- Michigan College, (31) 692.
- Netherlands, (27) 798; (31) 898; (37) 193; (38) 195; (39) 898.
- New Brunswick, (35) 894.
- New England, (34) 596.
- New South Wales, (33) 790; (36) 292.
- New York, (29) 791; (30) 92.
- North Dakota, (37) 596.
- Nova Scotia, (36) 193.
- Ontario, (34) 196.
- Philippines, (33) 595; (36) 495.
- Prince Edward Island, (31) 800.
- Prussia, (29) 297; (30) 793; (32) 392.
- public schools, (25) 299, 898.
- Rhine Province, (30) 393; (33) 296.
- Sao Paulo, (29) 191.
- Saskatchewan, (36) 291; (37) 394.
- Saxony, (32) 689.
- Scandinavia, (29) 897.
- Scotland, (29) 494; (33) 790; (36) 394; (37) 892; (40) 393.
- secondary schools, (26) 898; (27) 490.
- Servia, (31) 393.
- South Africa, (26) 492; (33) 194.
- South Australia, (29) 295.
- Southern States, (27) 296.
- Sweden, (30) 494.
- Switzerland, (33) 695.
- the Caucasus, (33) 500.
- Trinidad, (27) 597; (29) 92.
- Union of South Africa, (37) 493.
- United Kingdom, (26) 491.
- United States, (26) 898; (29) 494; (33) 789, 896.
- United States and Canada, treatise, (34) 291.
- Victoria, (27) 597; (32) 493; (36) 292.
- Virginia, (37) 192.
- Wales, (36) 495; (37) 294.
- Washington, (37) 597.
- West Indies, (28) 391, 793; (32) 699.
- Western Australia, (40) 95.
- Wisconsin, (26) 296.
- Württemberg, (30) 393.
- institutions in Sweden, (36) 690.
- New York State advisory board, (29) 99.
- notes, (28) 90; (29) 103; (31) 894.
- organization, (31) 96.
- organization and administration, (39) 194.
- outline, (26) 94.
- papers on, (34) 307.
- present trend, (27) 797.
- principles and methods, (26) 491.
- problems in, (35) 405.
- program in, (38) 598.
- progress in, (28) 691; (29) 897; (31) 898; (32) 895; (35) 394.
- proposed principles, (39) 193.
- purpose, (36) 193.

Agricultural—Continued.
education—continued.

- relation to national affairs, (37) 401.
- relation to rural sociology, (30) 897.
- school gardening in, (26) 296.
- education, secondary—
- in Massachusetts, (28) 490.
- Russia, (37) 792.
- United States, (31) 402.
- progress in, (26) 390.
- education—
- specialization in, (39) 91.
- state aid in, (28) 297.
- supervised practice in, (40) 795.
- textbook, (27) 898.
- through home projects, (30) 597.
- types of, (32) 689.
- value to the farmer, (31) 396.
- vocational, (39) 98, 194, 298.
- education, vocational—
- four-year curriculum, (40) 795.
- home project in, (40) 295.
- in Massachusetts, (33) 595.
- New York, (33) 499.
- Pennsylvania, (37) 192.
- Texas, (38) 597.
- United States, (36) 701.
- notes, (28) 491.
- reference material for, (40) 95.
- secondary, (40) 897.
- State supervision, (40) 690.
- teacher training, (40) 399.
- year's work, (40) 492.
- engineering—*see also* Engineering.
- at land-grant colleges, (39) 896.
- bibliography, (36) 400.
- education in United States and Canada, (38) 195.
- Federal aid, (37) 610.
- instruction in, (28) 200.
- instruction in Prussia, (33) 791.
- opportunities in, (28) 601.
- papers on, (31) 185.
- problems in Mexico, (26) 398.
- treatise, (33) 681.
- value to farm life, (35) 184.
- work for high schools, (35) 94.
- engineers—
- conventional designs for, (29) 186.
- handbook for, (29) 484.
- place and field, (33) 880.
- enterprises, large v. small, (26) 387.
- enterprises, organization of, (33) 292.
- essay contest, (30) 399.
- exhibits—
- for fairs, (30) 197.
- in Munich, (26) 193.
- preparation, (31) 495, 793; (34) 493.
- experiment stations, *see* Experiment stations.
- experiments—
- coordination of effort in, (36) 7.
- editorial on, (29) 701.
- element of chance in, (33) 601.
- error in, (26) 732.
- in America, (28) 40.
- in German colonies, (31) 196.
- in United Kingdom, (30) 599.
- interpretation, (26) 732.
- exports—
- from Denmark, (27) 391.
- from United States (31) 295; (33) 490.
- expositions, educational value, (27) 694.
- Extension Act, editorial on, (30) 601.
- extension—
- addresses on, (32) 195, 196.
- and expenditures, (38) 898.
- and experiment stations, relation, (32) 96; (33) 306; (36) 498; (38) 6, 7.
- at Southern Commercial Congress, (26) 701.
- basis for, (34) 104.
- by automobile, (26) 496.
- examples of, (35) 195.
- functions of, (34) 699.
- fundamentals in, (35) 198.
- in Alberta, (36) 698.
- Argentina, (37) 793.
- Arizona, (33) 94.
- Belgium, (28) 392.
- California, (32) 288.

Agricultural—Continued.

extension—continued.

- in Canada, (26) 391; (32) 691.
- China, (33) 800.
- College of Hawaii, (32) 691.
- Cornell University, (32) 895.
- foreign countries, (33) 698.
- Hawaii, (26) 493.
- high schools, (27) 297; (29) 298; (30) 694; (32) 496; (33) 799; (35) 92; (36) 293, 595.
- Illinois, (32) 691.
- Indiana, (27) 395; (33) 595.
- Louisiana, (27) 896.
- Louisiana State University, (31) 598.
- Massachusetts, (27) 96; (30) 94; (31) 692; (32) 598; (33) 305.
- Minnesota, (32) 895.
- Netherlands, (36) 95.
- New Jersey, (32) 598; (33) 698; (34) 197.
- New York, (26) 391; (35) 198.
- Ontario, (28) 695; (31) 693.
- Philippines, (30) 632.
- rural high schools, (28) 692.
- rural schools, (29) 899.
- secondary schools, (31) 799.
- South Carolina, (33) 698.
- Tennessee, (26) 795.
- United States, (28) 695; (29) 494, 898; (31) 195; (32) 1, 14, 194; (33) 94.
- United States, origin and development, (36) 896.
- Wisconsin, (27) 97; (31) 899; (33) 396; (39) 897.
- instruction in Argentina, (28) 598.
- instruction, outline, (29) 599.
- legislation in United States, (35) 297.
- Lever bill, (28) 596.
- meaning, (27) 395.
- moving picture in, (39) 896.
- notes, (28) 898, 899.
- of railroads in Spain, (31) 400.
- of Southern Railway, (28) 899.
- organization, (31) 96.
- organization and administration, (26) 703.
- organization and policy, (39) 708.
- organization under Smith-Lever Act, (33) 101.
- paper on, (38) 795.
- preparing men for, (30) 99.
- publications, (32) 9.
- reaction upon research, (30) 97.
- relation to agricultural colleges and experiment stations, (31) 196.
- relation to farmers' cooperative organizations, (39) 896.
- response to war conditions, (37) 1, 604.
- school credit for, (36) 293.
- State and national cooperation in, (30) 603.
- suggestions for, (34) 292.
- training men for, (28) 14.
- training teachers for, (26) 299; (32) 15.
- value of instruction trains, (28) 15.
- woman's work in, (26) 20.
- workers, preparation, (33) 304; (35) 297.
- facts and figures, handbook, (35) 899.
- fair exhibits, (37) 895.
- fairs and exhibitions in United States, (28) 796.
- fairs, food training camps, (37) 400.
- fairs, notes, (33) 98, 698.
- federation in New York, (40) 689.
- finance in Europe, (28) 689.
- grants of General Education Board, (31) 400.
- history, manual, (40) 890.
- History Society, notes, (40) 100.
- Holdings Acts of Great Britain, (39) 89.
- holdings—
 - in Bulgaria, (33) 93.
 - England, treatise, (28) 189.
 - Norway, (31) 192.
 - United Kingdom, (31) 391.
- hydraulics station in Tunis, (31) 587.
- hydraulics, treatise, (33) 390.
- immigration in Ontario, (27) 794.
- implement shed, construction, (34) 687; (36) 590.
- implement sheds for prairie farms, (35) 690.
- implements—
 - and machinery, markets in Chile and Peru, (38) 492.
 - and machinery, tests, (35) 578.
 - cost of, (33) 492.

Agricultural—Continued.

implements—continued.

- data sheets, (36) 590.
- description, (30) 892; (33) 489.
- development and use, (27) 90.
- in Argentina, (36) 590.
- in Bombay Presidency, (35) 293.
- industry in United States, (30) 791.
- instruction in, (28) 394.
- motor, evolution, (28) 885.
- normal day's work of, (35) 892.
- notes, (28) 487.
- purchasing cooperatively, (36) 290.
- safety devices for, (29) 788.
- tests, (27) 485; (34) 88.
- wood used in, (27) 191.
- imports of Denmark, (27) 391.
- income, relation to cost of production, (28) 594.
- institute—
 - at Alnarp, (29) 172.
 - Florence, Italy, (35) 695.
 - Obersiebenbrunn, (34) 492.
 - Spalato, (32) 92.
 - University of Halle, (26) 598; (27) 195; (32) 794; (34) 394.
 - Zurich, report, (26) 26.
- of Colombia, (32) 699.
- Montevideo, development, (28) 490.
- Paris, memoir, (39) 896.
- Santiago, (34) 196.
- Spain, project for, (40) 890.
- institutes for teachers in Porto Rico, (28) 693.
- institutions—
 - and associations in Denmark, (37) 295.
 - and organizations in Netherlands, (39) 898.
 - as affected by European war, (35) 605.
 - in Europe, (32) 197.
 - Hungary and Balkan States, (31) 392.
 - Netherlands, (33) 790.
 - Württemberg, (27) 695.
- state, coordination, (28) 401.
- treatise, (28) 690.
- instruction—*see also* Agricultural education.
 - act in Canada, (32) 91.
 - aim and scope, (27) 392.
 - and research in Dutch East Indies, (35) 592.
 - at University of Göttingen, (31) 493.
 - class projects, (37) 194.
 - courses, (40) 492.
 - dangers to, (34) 896.
 - discussion, (28) 295, 296.
 - equipment and material in, (28) 693.
 - exercises in, (32) 393.
 - farm practice in, (32) 194.
 - field exercises in, (35) 198.
 - for Canadian troops in France, (38) 700.
 - city boys in England, (38) 194.
 - farm boys, (40) 196.
 - farm women in France, (31) 493.
 - interned soldiers, (34) 498.
 - soldiers, (39) 98, 699, 708.
 - soldiers and sailors, (40) 591.
 - soldiers' orphans, (38) 300.
 - teachers, (29) 297; (31) 498.
 - teachers in Porto Rico, (31) 494; (32) 493.
 - women, (28) 296, 793; (30) 495, 793.
 - women in France, (31) 899.
 - women in Great Britain, (35) 395.
 - women in state colleges, (32) 491.
 - young girls, (29) 695.
- four-year college course, (32) 9.
- high school, in Germany, (30) 495.
- home practice in, (35) 694.
- home projects in, (28) 792; (31) 97, 793; (32) 289; (33) 797; (34) 93, 899; (35) 195, 198, 298, 498, 594; (36) 896; (37) 194, 296, 795; (38) 697.
- in Alaska, (32) 492; (37) 393.
- Alberta, (33) 695; (37) 293.
- Argentina, (28) 598; (31) 493; (37) 294; (38) 296.
- Atlantic Co., New Jersey, (40) 295.
- Austria, (26) 689, 690; (28) 392; (30) 194; (31) 392; (32) 290; (35) 895.
- Austria and Denmark, (36) 895.
- Austria and Germany, (32) 392.
- Belgium, (27) 694; (30) 694; (31) 691.
- Bohemia, (32) 290.
- Bombay Presidency, (31) 692.
- British Columbia, (37) 293.

Agricultural—Continued.

Instruction—continued.

in Burma, (28) 498.

California, (37) 394.

Canada, (31) 194; (33) 596, 897; (34) 98, 491, 691; (35) 395; (36) 495, 690, 793; (37) 699; (38) 92, 93, 299; (39) 396, 692, 798, 897, 898; (40) 396.

Ceylon, (32) 500; (34) 697.

Chile, (34) 196, 491.

Connecticut, (33) 896.

Denmark, (27) 694; (28) 296; (31) 598; (36) 896.

Dutch East Indies, (34) 492; (38) 296.

elementary schools, (26) 191, 296; (28) 297, 691; (29) 91, 99, 394; (30) 195; (31) 298; (32) 290, 795; (33) 696; (34) 395, 597, 599, 794, 899; (35) 896; (37) 194, 295; (38) 897.

Europe, (26) 690; (33) 596.

Finland, (27) 597.

France, (28) 99, 296, 392; (29) 92.

Georgia, (38) 296.

German army, (26) 492; (28) 297, 492; (30) 495.

Germany, (28) 392.

Great Britain, (26) 295; (30) 299.

Greek Macedonia, (32) 500.

Grenada, (29) 199.

Haiti, (40) 690.

Hamilton County, Indiana, (29) 394.

high schools, (26) 190, 192, 391; (27) 296, 297, 491, 596, 896; (28) 391; (29) 494, 597, 897; (30) 98, 793; (31) 297, 298, 394, 692; (32) 290, 492, 499, 690; (33) 195, 595; (34) 395, 692, 793, 897, 898; (36) 594, 691, 895; (37) 93, 194, 494, 793; (39) 92; (40) 93, 197.

high schools of Michigan, (36) 692.

Illinois, (40) 794.

Indiana, (33) 595, 597, 897.

Iowa, (33) 597; (35) 592.

Ireland, (27) 597; (29) 494; (31) 692, 898; (33) 790; (36) 596; (37) 294; (38) 598; (40) 94.

Italy, (30) 194.

Khaki University, (39) 699.

land-grant colleges, (39) 707.

Latin America, (31) 499; (34) 299; (38) 199.

Los Angeles, (40) 197.

Louisiana, (31) 193.

Lower Austria, (30) 393.

Maryland, (33) 695; (34) 793; (35) 194.

Massachusetts, (38) 396.

Mauritius, (31) 800.

Mexico, (28) 597, 598.

Michigan, (32) 595; (36) 495.

Michigan high schools, (38) 195.

Minnesota, (32) 595; (37) 793.

Missouri high schools, (32) 290, 499.

Montevideo, (28) 598.

Netherlands, (26) 691; (28) 392; (29) 898; (36) 95.

New Brunswick, (37) 892; (40) 94.

New Hampshire, (33) 397; (34) 793; (37) 699; (40) 296.

New Mexico, (29) 92; (32) 689; (34) 793.

New York, (26) 390; (32) 690; (33) 595, 897; (37) 293; (40) 295.

New Zealand, (32) 393; (37) 597.

normal schools, (38) 195.

North Carolina, (32) 895; (36) 596.

North Dakota, (37) 193.

Norway, (26) 798; (28) 297; (32) 392; (37) 294.

Ohio, (30) 298.

Oklahoma, (30) 92.

Ontario, (30) 595, 596, 694; (34) 196, 597, 897; (37) 892.

Philippines, (35) 92; (36) 292; (37) 494; (40) 898.

Pommern, (30) 793.

Porto Rico, (30) 199; (33) 397.

Posen, (29) 92.

primary grades, (33) 898.

Prince Edward Island, (37) 793; (40) 197.

Prussia, (26) 492; (27) 695; (35) 592.

public schools, (27) 94; (31) 494, 896; (32) 493, 596; (33) 791; (37) 192, 494, 898.

public schools of Indiana, (32) 691.

Agricultural—Continued.

Instruction—continued.

in public schools of Ohio, (32) 392.

relation to community food production, (38) 93.

rural schools, (26) 191, 596, 697; (27) 598; (28) 90, 193, 492, 693, 897; (29) 92, 695; (30) 795; (32) 691, 897; (34) 92, 693; (35) 395; (38) 697.

San Francisco, (40) 295.

Saskatchewan and Alberta, (32) 92.

Saxony, (28) 793; (33) 296, 493.

schools of Ontario, (28) 391.

secondary schools, (26) 191, 192, 498; (29) 99, 399; (30) 99, 799; (31) 96; (33) 896; (34) 693; (36) 691; (37) 395; (38) 795; (39) 797.

seventh and eighth grades, outline for, (39) 598.

Silesia, (30) 393; (35) 395.

South Africa, (39) 690.

South Carolina, Darlington County, (33) 698.

Spain, (28) 193; (29) 199; (37) 93.

State normal schools, (40) 490.

Surinam, (35) 193.

Sweden, (34) 492, 597; (35) 395.

Tasmania, (28) 598.

Tennessee high schools, (32) 499.

Tennessee, state aid for, (30) 199.

Texas, (37) 794.

the army, (26) 95.

Trinidad, (31) 898.

United States, (30) 297; (37) 392, 798.

United States Indian schools, (35) 895.

University of Cambridge, (28) 297.

Uruguay, (38) 500.

Utah, (37) 198.

various countries, (28) 597; (31) 296; (37) 394.

West Virginia, (29) 92.

Western Australia, (31) 699.

western Canada, (36) 698.

Wisconsin, (33) 94, 195; (39) 298.

lessons, (37) 296; (40) 198.

motion pictures for, (31) 799.

nature study in, (31) 896.

notes, (31) 691, 791.

papers on, (33) 797; (36) 198; (37) 192, 596.

preparation of teachers for, (26) 303, 595; (27) 296.

problems in, (30) 93.

progress in, (26) 301; (35) 298.

pure science in, (32) 194.

raw materials in, (33) 194.

relation to weather, (26) 94.

secondary, (40) 895.

secondary, conference on, (34) 697, 799.

secondary, supervision, (31) 800.

specialization in, (28) 296.

suggestions to teachers, (32) 493.

teaching language through, (28) 91.

textbook, (40) 95.

use of land in, (33) 195, 396.

vocational, (33) 695; (39) 98, 194, 298.

instructors, geological course for, (29) 495.

insurance, (28) 389; (40) 193.

insurance—

cooperative, (29) 790.

in Belgium, (31) 94.

Denmark, (27) 590, 794.

France, (26) 388; (37) 888.

Nebraska, (26) 594.

Netherlands, (30) 391.

New England, (36) 192.

Switzerland, (38) 293.

law in Germany, (27) 192.

investigations—

element of chance in, (33) 601.

examples of, (36) 306.

ideals and standards for, (30) 5.

in French colonies, (40) 390.

in Netherlands, (36) 95.

logarithmic curves in, (32) 766.

need for safeguarding, (40) 6.

physics in, (36) 106.

publication of, (33) 401.

small laboratories in, (32) 303.

v. experience, (34) 101.

Agricultural—Continued.

- investigators, training, (36) 101.
- journalism, instruction in, (37) 794.
- journals—
 - abstract, (40) 306.
 - as affected by European war, (35) 608.
 - new, (28) 99; (30) 499, 799; (31) 200; (32) 699; (33) 100; (34) 499; (35) 100, 600, 699; (36) 800; (37) 200, 500; (38) 500; (39) 99, 200; (40) 297, 400, 699.
- paper conservation by, (39) 400.
- technical, development in America, (37) 405.

labor—*see also* Labor.

- bureau in Iowa, (28) 389.
- by children, (40) 591.
- by school children, (38) 193; (40) 598.
- camp for boys, (40) 96.
- city men for, (40) 389.
- cost in Mexico, (28) 88.
- cost of, (32) 791.
- demand for, (28) 488.
- distribution, (29) 490.
- efficiency, (27) 488, 690.
- for 1918 wheat harvest in Kansas, (40) 92.
- in Australia, (29) 295, 393.
- California, (38) 89, 894.
- Canada, (37) 889.
- England and Wales, (32) 390.
- Georgia, (32) 489.
- Great Britain, (38) 105.
- Great Britain, treatise, (26) 489; (32) 285.
- Ireland, (37) 492.
- New Jersey, (38) 594.
- North Carolina, (35) 589; (37) 190.
- Ontario fruit district, (39) 594.
- Russia, (32) 489.
- Saskatchewan, (38) 191.
- Saxony, (32) 689.
- southwestern States, (34) 90.
- Switzerland, (37) 790.
- United States, (28) 87, 895; (38) 593, 594.
- western India, (34) 690.
- income, (27) 794.
- management, (26) 594.
- mobilization, (37) 290.
- mobilization of boys for, (39) 90, 597, 693.
- notes, (29) 634.
- organization in Germany, (29) 392.
- papers on, (39) 90.
- problem, (39) 295.

labor problem—

- handling, (37) 790; (39) 593.
- in France, (26) 292.
- in Germany, (27) 488.
- in Scotland, (30) 592.
- paper on, (30) 591.

labor—

- requirements, meeting, (40) 591.
- seasonal distribution, (27) 592; (37) 390.
- supply, (39) 688.

labor, wages—

- for, (30) 594; (31) 490; (33) 93; (40) 391.
- in Ahmadnagar, (28) 595.
- England, (29) 596.
- England and Wales, (26) 93.
- Great Britain, (30) 492, 592.
- India, (37) 792.
- Jamaica, (26) 687.
- Sweden, (37) 492; (38) 392.
- United States, (28) 87, 791.
- western India, (34) 690.

labor, women for, (40) 891.

laborers—

- camp sanitation and housing for, (33) 691.
- cottages for, (32) 687.
- day's work of, (35) 892.
- female, in Germany, (33) 190.
- food of, (30) 463.
- for Saskatchewan, (28) 688.
- housing, (33) 489.
- housing on citrus ranches, (39) 795.
- improvement of living conditions, (28) 292.
- in Argentina, housing conditions, (33) 394.
- Belgium, treatise, (33) 92.
- Denmark, (30) 392.
- England and Wales, (29) 189.
- Finland, (37) 91.
- France, (35) 496; (38) 90, 494.
- Germany, (31) 788.

Agricultural—Continued.

laborers—continued.

- in Ireland, (26) 688; (30) 90; (34) 289, 895; (36) 791.
- Italy, (40) 790.
- London, (26) 189.
- Saxony, (28) 489.
- Sweden, (35) 793.
- Sweden, conditions of life, (27) 295.
- United Kingdom, (30) 791; (31) 690.
- United States, (30) 591.
- increasing efficiency of, (31) 593.
- insurance against accidents, (30) 391; (31) 94.
- minimum wages, (40) 192, 591, 687, 891.
- payment by piece, (31) 894.
- Polish, in France, (27) 295.
- standard of living, (31) 261.
- training at home, (32) 289.
- ladder to land ownership, (40) 687.
- land, *see* Land.
- laws in—
 - Belgian Congo, (40) 392.
 - Illinois, (33) 395.
 - Maine, (38) 494.
 - Massachusetts, (36) 898.
 - Missouri, (30) 599.
 - Nebraska, (26) 693.
 - New York, (26) 93; (29) 897; (31) 94; (36) 688; (40) 390.
 - North Dakota, (36) 493.
 - Ohio, (26) 93.
 - Washington, (31) 196.
- laws, manual, (31) 293.
- lease, short-time, advantages of, (27) 192.
- legislation—
 - federal, (27) 494; (28) 495.
 - in Great Britain, treatise, (34) 289.
 - Netherlands, (31) 596.
 - Philippines, (28) 699.
 - United States, (35) 101, 297, 598.
 - international, (33) 191; (34) 91.
 - of 63rd Congress, (32) 499.
 - yearbook, (36) 393; (38) 493; (40) 890.
- libraries—
 - closer union, (28) 1.
 - cooperation among, (34) 494.
 - in Belgium, (27) 694.
- Library Section of American Library Association, (26) 797.
- machinery—*see also* Harvesting and Threshing machinery.
 - advantages and disadvantages, (29) 89.
 - as affected by European war, (36) 86.
 - ball bearings in, (31) 487.
 - bearings for, (37) 490.
 - calculating interest on, (34) 194.
 - care, (27) 899; (29) 595.
 - care and use, (29) 892.
 - census in Nebraska, (40) 194.
 - college course in, (38) 95.
 - computing power and efficiency, (27) 485.
 - cost, (32) 791.
 - data sheets, (36) 590.
 - description, (27) 387; (30) 892.
 - development, (33) 488.
 - directory, (37) 886.
 - elementary course in, (27) 96.
 - for moor plantations, (29) 488.
 - handbook, (26) 686; (28) 290.
 - imports and exports, of Germany, (32) 789.
 - in Argentina, (36) 590.
 - in Cuba, (37) 591.
 - in Germany, (27) 190.
 - injuries from, (27) 893.
 - instruction in, (28) 394.
 - labor saving by, (39) 794, 795.
 - laboratory exercises, (28) 200.
 - laboratory manual, (30) 795, 892; (38) 492; (39) 692.
 - manufacture in Russia, (32) 789.
 - notes, (27) 90, 689; (38) 692.
 - operation and management, (39) 594.
 - papers on, (31) 186; (34) 299.
 - purchase and care, (31) 186.
 - recent inventions in, (35) 494.
 - safety devices for, (29) 788.
 - selection and care, (34) 789.

Agricultural—Continued.

- machinery—continued.
 - service and cost, (34) 587.
 - situation, (38) 893.
 - situation, 1918, (40) 189.
 - speed indicators for, (29) 389.
 - tests, (28) 291; (31) 587; (32) 188; (34) 588.
 - trade associations in United States, (33) 787.
 - trade in France, (32) 888.
 - treatise, (27) 387; (35) 494.
 - use in Spain, (35) 296.
- mechanics in Cambridge University, (36) 699.
- microbiology, review of literature, (30) 378.
- microbiology, treatise, (27) 223.
- opportunities for educated women, (34) 492.
- opportunities for women, (32) 389.
- opportunities in United States, (28) 294.
- organization—
 - as aid in war situation, (39) 795.
 - essentials, (30) 693.
 - in Belgium, (27) 590; (31) 194.
 - Europe, (34) 91.
 - Ireland, (39) 796.
 - Netherlands, (34) 893.
 - paper on, (31) 388.
 - Society, report, (32) 792; (34) 194; (36) 392.
 - traders, and farmers, booklet, (28) 292.
 - treatise, (28) 689.
- organizations, (35) 190.
- organizations—
 - bibliography, (30) 593.
 - in Bavaria, (29) 294.
 - Massachusetts, (40) 689.
 - United States, (29) 693.
 - official, in France, (40) 689.
- outlook, (29) 896; (30) 392, 593; (31) 95, 190, 391, 789; (32) 90, 287, 490, 594, 893.
- pamphlets, catalogue, (29) 93.
- pastoral colonies in Argentina, (40) 392.
- pensioners in England, (27) 795.
- policy—
 - in Germany, (40) 891.
 - in Great Britain, (40) 91, 790.
 - in Great Britain, report outlining program for, (39) 402.
 - National, suggestions for, (39) 703.
 - of British Empire in India, Latin America, etc., (40) 686.
 - suggestions for, (40) 790, 889.
- population—*see also* Population.
 - movement to cities, (31) 294; (33) 91, 204.
 - of Austria, (31) 491.
 - British India, (33) 295.
 - different countries, (31) 490.
 - England and Wales, (32) 491.
 - Portugal, (27) 489.
 - Prussia, (30) 90.
 - Sweden, (31) 691.
 - reasons for decrease, (35) 294.
- possibilities in—
 - Alaska, (28) 488; (30) 491.
 - America, (27) 893.
 - California, (32) 193.
 - Canal Zone, (27) 19, 91.
 - Georgia, (26) 688.
 - Mexico, (27) 895.
 - Missouri, (31) 789.
 - Thai-nguyen Province, Indo-China, (39) 894.
 - the South, (26) 688.
 - United States, (27) 592.
 - United States and western Canada, hand-book, (29) 596.
 - Virginia, (27) 895.
- practice, effect on decline of Roman Empire, (35) 694.
- practice for students, (28) 597.
- practices in a Deccan village, (38) 91.
- problems in England, handbook, (28) 387.
- production—
 - and trade in Great Britain and Ireland, (36) 291.
 - economics of, (28) 790; (32) 286; (35) 407.
 - for 1919, (40) 487.
 - in Austria, (36) 291.
 - Belgium, (32) 288.
 - Denmark, (34) 491.
 - England, increasing, (38) 90.
 - France, (30) 895.

Agricultural—Continued.

- production—continued.
 - in Great Britain, (37) 392.
 - Italy, (37) 92.
 - South Africa, (38) 494.
 - Switzerland, (40) 790.
 - United States, (34) 393; (37) 595.
 - Victoria, (27) 390.
 - West Virginia, (31) 190.
- increasing, (35) 192.
- problems in, (32) 891.
- relation to population, (30) 895.
- products—
 - acids of, identification, (40) 13.
 - analyses, (27) 109, 413; (29) 119.
 - animals injurious to, (26) 452.
 - as affected by phosphates, (27) 326.
 - bushel weights, (37) 889.
 - census statistics, (28) 89.
 - commerce in, treatise, (29) 293.
 - composition and fertilizing value, (31) 30.
 - cost and price fixing, (39) 687.
 - cost of production, (31) 689; (32) 490, 688.
 - cost of production in Austria, (28) 594.
 - demand for, (34) 892.
 - distribution, (28) 292; (29) 188, 894; (35) 407.
 - distribution between landlord and tenant, (31) 390.
 - distribution in cities, (32) 89.
 - drying, (35) 417.
 - exportation restrictions due to European war, (33) 396.
 - exports, (28) 90.
 - exports and imports, (26) 294.
 - exports and imports in France, (26) 595.
 - foreign trade in, (29) 493; (34) 194.
 - freight rates on, (34) 392.
 - French commerce in, (31) 596.
 - imports, (28) 89.
 - imports into Germany, (34) 195.
 - imports into United Kingdom, (26) 688.
 - in Japan, (26) 491.
 - international trade in, (28) 790; (35) 793.
 - laws affecting price, (29) 162.
 - marketing, (26) 387, 388; (27) 91, 793; (28) 592, 790, 894; (29) 294, 595, 790, 894; (30) 295, 390, 490, 496, 792, 894; (31) 894; (32) 194, 287, 593; (33) 92, 192, 293, 491, 594, 893; (34) 490, 792; (35) 89, 296, 407; (36) 91, 392; (37) 89, 391; (38) 293, 294, 494, 698, 895; (39) 296, 593, 895; (40) 293, 294, 488, 489, 791, 792.
- products, marketing—
 - by parcel post, (31) 789; (34) 392, 690.
 - cooperatively, (31) 594; (32) 192, 892; (33) 294, 694, 893; (37) 888.
- in Hawaii, (31) 388; (35) 190.
- North Carolina, (34) 288.
- Queensland, (32) 793.
- western Canada, (36) 493.
- Wisconsin, (28) 593.
- treatise, (34) 893.
- products—
 - mobilization in Italy, (38) 694.
 - mobilization in Portugal, (38) 99.
 - of British West Africa, handbook, (26) 189.
 - perishable, marketing, (35) 892.
 - perishable, transportation, (40) 488.
 - prices, (26) 190, 359, 894; (29) 493.
- products, prices—
 - geographical phases, (39) 895.
 - in Australia, (29) 393.
 - Canada, (27) 392; (32) 490; (36) 593.
 - England and Wales, (31) 790; (34) 491.
 - India, (27) 392; (31) 296; (34) 195; (37) 792.
 - Ireland, (37) 291.
 - 1915, (35) 394.
 - Scotland, (33) 492; (35) 497.
 - Tokyo, (26) 491.
 - various countries, (32) 594.
 - relation to output, (27) 91.
 - statistics, (39) 688.
- products—
 - purchasing power, (28) 489.
 - receipts and exports in New York City, (37) 891; (39) 690.
 - relation to electricity, (27) 231.
 - standardization and warehousing, (35) 296.
 - trade and commerce in, (35) 497.

Agricultural—Continued.

- products—continued.
 - trade and commerce in Chicago, (37) 392.
 - trade of Brazil, (30) 791.
- products, transportation in—
 - Argentina, (35) 892.
 - France, (33) 294.
 - various countries, (29) 789.
- products—
 - valuation on dry matter content, (36) 92.
 - water transportation, (32) 391.
- profits in Great Britain, (30) 492.
- program for United States, (38) 101.
- progress in United States, (32) 490.
- publications, selected list, (35) 195.
- purchase societies in Italy, (27) 192.
- reconstruction in—
 - France, (38) 405.
 - Great Britain, (38) 401.
- reeducation of soldiers, (36) 794.
- rent in Great Britain, (30) 492.
- reorganization in Portuguese East Africa, (32) 399.
- research—
 - and experiment, (36) 5.
 - constructive ideals in (32) 603.
 - coordination of effort, (39) 605.
 - development in Australia, (39) 1.
 - economics in, (26) 386.
 - elements of progress, (40) 701.
 - essentials of, (29) 406, 702.
 - future in United States, (39) 91.
 - habit of concentration in, (32) 301.
 - importance of, (32) 6.
 - in Australia, (30) 393.
 - Brazil, (35) 695.
 - California, (40) 599.
 - Canada, (33) 100; (36) 793; (39) 296.
 - England and Wales, (29) 897; (33) 596; (34) 394.
 - England and Wales, government aid to, (35) 194.
 - Great Britain, (32) 794; (36) 798.
 - Great Britain, government aid to, (28) 595.
 - Greece, (31) 800.
 - Italian Africa, (31) 699.
 - Scotland, (29) 494; (33) 790; (36) 394; (37) 892; (40) 393.
 - the Caucasus, (33) 500.
 - United States, (39) 104.
 - Uruguay, (34) 308.
 - institutions in Great Britain, (26) 496.
 - interpretation of results, (31) 327.
 - organization in India, (40) 601.
 - preparation of men for, (33), 303.
 - publication of, (31) 601.
 - relation to national affairs, (37) 401.
 - small field laboratory for, (32) 96; (33) 793.
- resources of—
 - Alaska, (40) 813.
 - Burma, (40) 195.
 - California, (33) 894; (35) 795; (37) 790.
 - Colorado, (39) 90.
 - Cuba, (40) 194.
 - Georgia, (36) 790.
 - German colonies, (38) 192.
 - Italy, (27) 92.
 - Massachusetts, (26) 290; (38) 307.
 - Michigan, (39) 796.
 - Minnesota, (38) 294.
 - Montana, (36) 894; (39) 796; (40) 92.
 - Nebraska, (35) 394.
 - New York, (37) 790.
 - Rhode Island, (36) 93.
 - Russia, (37) 791.
 - South Dakota, (37) 790.
 - Tennessee, Robertson Co., (28) 516.
 - Union of South Africa, (39) 91.
 - Utah, (37) 790.
 - Vermont, (36) 290.
- rules in Italy, (37) 888.
- scholarships in South Africa, (28) 498.
- school—
 - at Mährisch-Schönberg, (31) 392.
 - Mödling, Austria, (31) 493.
 - San Cristobal, Santo Domingo, (26) 798.
 - Woodstock, New Brunswick, (32) 392.
 - for girls in Belgium, (30) 93.

Agricultural—Continued.

- school—continued.
 - graduates, colonization in Argentina, (32) 92.
 - high, at Manassas, Virginia, (26) 397.
 - high, in Maryland, (26) 394.
 - high, of Vienna, (27) 695.
 - in Argentina, (26) 798.
 - Brazil, (28) 90, 793.
 - Lyon, France, (40) 499.
 - Morocco, (26) 498.
 - southern India, (30) 399.
 - Spain, (26) 798.
 - Tunis, (28) 794.
 - normal, in Kansas, (26) 497.
 - of Chatauqua Institution, (26) 497.
 - of Grignon, (30) 793.
 - vocational, in Indiana, (31) 597.
 - schools—
 - aim of, (29) 791.
 - and colleges in France, Germany, and Belgium, (28) 793.
 - civic and social training in, (40) 94.
 - county, in Massachusetts, (28) 799.
 - county, in Michigan, (32) 794.
 - county, in Wisconsin, (26) 193.
 - demonstration plats for, (32) 494.
 - district, in Georgia, (27) 694, 896; (30) 92; (32) 595; (34) 691; (37) 193.
 - drawing for, (36) 597.
 - equipment for, (38) 93.
 - exhibits for, (31) 793.
 - fire extinguishing instruction in, (31) 394.
 - furniture for, (31) 694.
 - schools, high—
 - course of study for, (29) 791.
 - courses and equipment for, (34) 793.
 - equipment, (27) 490.
 - extension work in, (30) 694.
 - farm mechanics for, (32) 597.
 - in Nebraska, (32) 692.
 - New York, (26) 498.
 - North Dakota, (34) 897.
 - South Australia, (26) 798.
 - suggestions for, (30) 495.
 - unprepared teachers in, (27) 490.
 - use of land by, (32) 896.
 - schools—
 - in Arkansas, (27) 797.
 - Belgian Congo, (34) 491.
 - Chile, (38) 195.
 - Denmark, (35) 695.
 - Europe, (33) 790.
 - Georgia, (26) 296.
 - Mexico, (26) 498.
 - New York, (26) 192, 390; (37) 394.
 - Norway, (27) 195; (29) 597; (32) 92; (38) 794.
 - Panama, (30) 700.
 - Pennsylvania, (32) 596.
 - Philippines, (31) 296; (38) 300.
 - Quebec, (38) 92.
 - Saxony, (33) 493.
 - United States, (36) 895.
 - intermediate, in Austria, (34) 491.
 - itinerant, notes, (27) 597.
 - laboratory equipment, (37) 798.
 - legal instruction in, (33) 598.
 - lower, in Prussia, (28) 794.
 - methods in, (30) 93.
 - movable, (40) 595.
 - notes, (31) 692.
 - place in educational system, (33) 790.
 - political economy in, (34) 693.
 - practicums for, (30) 195, 196.
 - purposes and ideals, (36) 792.
 - rural cooperation in, (28) 296.
 - secondary, relation to experiment stations, (28), 97.
 - state-controlled, in France, (28) 598.
 - supervised farm work in, (28) 492.
 - uniformity of instruction in, (31) 392.
- schools, vocational—
 - in Massachusetts, (35) 694.
 - papers on, (26) 697.
 - work course in, (27) 297.
- schools—
 - winter, in Switzerland and Austria, (28) 392.
 - woodworking exercises for, (30) 94.

Agricultural—Continued.
science—

- affiliation of societies, (26) 3.
- as a national asset, (39) 102.
- college degrees of men engaged in, (29) 191.
- cooperation in, (32) 97.
- functions of criticism in, (30) 407.
- journal literature of, (30) 401.
- progress in, (27) 818; (29) 404.
- society for promotion, (26) 1.
- settlement, intensive, in eastern Prussia, (30) 692.
- shows in Bengal, (26) 493.
- small holdings—
 - advantages of, (30) 492.
 - buildings for, (31) 786.
 - economy of, (29) 188.
 - in Denmark, (26) 292; (29) 895.
 - England and Wales, (31) 592.
 - Great Britain, (26) 592, 688; (27) 590, 591, 894
 - Italy, (34) 391.
 - Oxfordshire, (37) 791.
- paper on, (26) 592.
- treatise, (28) 790.
- social week in Chile, (34) 293.
- societies—
 - affiliation, (26) 195.
 - in Bombay Presidency and Sind, (30) 693.
 - Finland, (37) 790.
 - Germany, (29) 392.
 - Great Britain, (26) 895.
 - Jamaica, (26) 687.
 - Pennsylvania, (37) 888.
 - Tunis, (31) 492.
 - United Kingdom, (32) 893.
- joint-stock, share leasing basis, (40) 490.
- society—
 - Minnesota State, history, (27) 490.
 - of Malmöhus Province, report, (37) 597.
- station—
 - at Cawnpore, report, (29) 138.
 - of Agra and Oudh, report, (26) 436.
- stations in India, report, (26) 232, 233.
- statistics, (27) 692.
- statistics—
 - census methods, (30) 790.
 - errors in, (34) 896.
 - handbook, (32) 490.
 - in Algeria, (33) 395.
 - Argentina, (27) 796; (31) 191; (35) 91, 893; (36) 690; (38) 596; (40) 792.
 - Australia, (27) 595; (28) 295; (38) 393; (40) 340, 393.
 - Austria, (30) 493, 896; (32) 491.
 - Belgium, (29) 393; (31) 491; (32) 288.
 - Bengal, (27) 296; (30) 896.
 - Bohemia, (30) 297.
 - Brazil, (38) 393.
 - British colonies, (27) 92.
 - British Columbia, (27) 796.
 - British Empire, (32) 491; (33) 492; (34) 596.
 - British Empire and foreign countries, (31) 96.
 - British Guiana, (35) 795; (37) 291; (40) 93.
 - British India, (30) 392; (31) 191; (36) 291.
 - British possessions, (30) 493; (33) 295.
 - Bulgaria, (30) 594.
 - California, (33) 788; (40) 194.
 - Canada, (30) 91; (33) 193; (34) 490; (38) 596.
 - Chile, (32) 689; (37) 92; (38) 495, 695; (40) 894.
 - Denmark, (30) 392; (31) 596; (32) 594; (33) 93; (34) 792; (37) 392; (39) 91.
 - Egypt, (26) 390; (33) 395; (38) 295.
 - England and Wales, (33) 894; (34) 491; (35) 590, 893; (36) 393, 690; (37) 392; (38) 192, 494, 495; (39) 595; (40) 594.
 - Finland, (30) 692; (35) 497; (36) 894, 895; (37) 93, 291; (40) 392.
 - Florida, (38) 294.
 - France, (27) 693; (29) 89; (34) 291, 691; (38) 393; (40) 793.
 - French colonies, (31) 296; (35) 497.
 - Galicia and Bukowina, (36) 93.
 - Germany, (31) 790; (35) 589; (36) 494.

Agricultural—Continued.
statistics—continued.

- in Great Britain and Ireland, (26) 688, 792; (27) 594, 693, 895; (29) 596; (31) 391; (34) 792; (37) 191.
- Greece, (32) 595.
- Hungary, (27) 594; (34) 596; (35) 497, 590.
- Idaho, (40) 689.
- India, (31) 491; (33) 295, 594, 789; (34) 92, 491; (35) 91, 498, 590; (37) 891; (38) 596, 695; (39) 595, 896; (40) 793, 894.
- Indiana, (37) 891.
- Ireland, (26) 389; (27) 796; (30) 297; (31) 895; (33) 894; (36) 393, 494; (38) 90, 295, 393.
- Italy, (32) 491; (34) 896; (40) 194.
- Japan, (27) 391; (33) 395; (37) 492, 792; (39) 595.
- Java and Madura, (36) 594; (37) 191.
- Kansas, (33) 695; (38) 91; (40) 690.
- Kentucky, (36) 290.
- Manitoba, (27) 594; (38) 596.
- Missouri, (36) 689; (39) 813.
- Nebraska, (40) 194.
- Netherlands, (31) 391; (32) 193; (33) 894; (36) 393; (38) 393; (40) 894.
- New Zealand, (31) 790.
- Norway, (33) 193; (37) 93; (38) 295; (39) 896.
- Ohio, (35) 497; (37) 191.
- Ontario, (26) 688; (30) 297.
- Pennsylvania, (39) 896.
- Porto Rico, (29) 189.
- Portugal, (36) 690; (39) 191.
- Prairie Provinces, Canada, (40) 594.
- Prussia, (26) 492; (30) 494.
- Queensland, (27) 489; (30) 791; (32) 288; (34) 792; (36) 393.
- Roumania, (27) 92, 594; (30) 896; (35) 894.
- Russia, (30) 392; (33) 193; (36) 594; (38) 295.
- Sao Paulo, (36) 291, 690.
- Saxony, (31) 96; (35) 297.
- Scotland, (29) 493; (30) 594; (32) 391; (33) 894; (35) 497; (37) 392; (40) 194.
- South Africa, (29) 897.
- South Australia, (27) 193, 693; (29) 295.
- Southern Rhodesia, (35) 590.
- Spain, (36) 791; (37) 191, 827; (38) 695; (40) 894.
- Sweden, (31) 691; (33) 395; (35) 894; (40) 294.
- Switzerland, (27) 895; (31) 895; (33) 193; (35) 590; (36) 393; (38) 695; (40) 793.
- Trinidad and Tobago, (40) 392.
- Uganda, (38) 495.
- Union of South Africa, (32) 391; (33) 789, 895.
- United States, (29) 88; (30) 691, 692; (31) 595; (32) 490, 689; (33) 93, 192, 299, 894; (36) 594.
- Uruguay, (36) 690; (38) 896; (39) 896.
- various countries, (27) 194; (32) 491.
- Victoria, (29) 896.
- Wisconsin, (37) 891.
- international, (31) 191, 594, 790; (34) 91, 290, 490.
- international, for 1911-12, (33) 295.
- methods of gathering, (33) 295.
- notes, (26) 897.
- sources, (40) 594.
- students—
 - and selective service law, (38) 198
 - biological training for, (28) 91.
 - practical training for, (28) 101.
 - practicums for, (32) 393.
- survey in—
 - Canada, (27) 692; (32) 593.
 - Montana, Gallatin Valley, (31) 689
 - Utah Lake Valley, (31) 689.
 - West Virginia, Brooke County, (35) 90.
- surveying, laboratory manual, (30) 888.
- surveys—
 - discussion, (28) 199.
 - importance of, (31) 225.
 - scope of, (31) 489.
- syndicates in Mexico, (26) 594.
- teachers—
 - associations in Austria, (32) 92.
 - geology for, (28) 795.

Agricultural—Continued.
teachers—continued.

- New York organization, (26) 499.
- organization, (32) 92.
- preparation, (28) 97; (33) 303, 596, 798; (35) 406; (39) 595, 798.
- qualifications, (28) 491.
- summer schools, (39) 798.
- training, (40) 394, 395, 399, 491, 595, 596, 598, 691, 692.
- training courses, (37) 794.
- training school for, (28) 98.
- teaching—
 - association for advancement, (28) 96.
 - departmental organization, (38) 495.
 - monograph, (32) 896.
 - treatise, (39) 691.
- tenancy, *see* Land tenancy and Land tenure.
- terms in India, (37) 436.
- trade between France and Russia, (31) 96.
- training for women in Holland, (33) 596.
- transportation in Belgian Kongo, (40) 390.
- unions in France, (27) 590.
- unit, enlarging, (27) 794.
- wages, *see* Agricultural labor wages and Wages.
- warehouses in Bavaria, (34) 691.
- words, textbook, (27) 393.
- work during winter season, (33) 292.
- work in Algeria, (31) 698.
- zones of Tropics, (30) 317.
- zones of Tropics, relation to climate, (26) 118.

Agriculture—

- address on, to bankers' committee, (40) 890.
- advanced course in, (26) 691.
- after the war, papers on, (40) 298.
- Alpine, development in Italy, (26) 130.
- American, organization, (30) 490.
- and meteorology, paper on (29) 120.
- preparedness, treatise, (37) 389.
- railroads, relative productivity, (28) 687.
- science in high schools, (30) 897.
- as affected by—
 - climate, (29) 811.
 - European war, (35) 601, 891.
 - new international relations, (40) 487.
- at American Association for the Advancement of Science, (32) 101; (34) 396; (36) 2.
- British Association for the Advancement of Science, (30) 399; (32) 398; (34) 298.
- Christchurch Technical College, (31) 898.
- Kirksville, Mo., Normal School, (28) 692.
- National Education Association, (29) 399; (31) 498; (33) 799; (35) 197.
- North Carolina State Normal and Industrial College, (26) 497.
- Pan American Scientific Congress, (34) 304.
- State School of Agriculture, Canton, New York, (26) 791.
- Syracuse University, (27) 399.
- Tohoku Imperial University, Japan, (33) 494.
- University of Bristol, (28) 399.
- bibliography, (28) 492; (29) 598; (31) 692.
- board of in New Zealand, (32) 399.
- British, as a business proposition, (40) 392.
- British, manual, (30) 297.
- Canadian, improving, (27) 692.
- catechism, (30) 195.
- collectivism in, (40) 688.
- colloid chemistry in, (29) 408.
- colonial, in Italy, (34) 491.
- correlating with public school subjects, (32) 596.
- correspondence courses in, (26) 19; (27) 897; (30) 695; (31) 297; (33) 96; (35) 592.
- courses in, (27) 196; (29) 92, 93, 693, 694, 791.
- cyclopedia, (38) 899.
- Department of, *see* United States Department of Agriculture.
- development in Europe, (40) 589.
- directors of, in New York, (40) 295.
- diversified, address on, (33) 490.
- economic factors in, (38) 594.
- educational value, (27) 693.
- efficiency movement in, (33) 490.
- elementary—
 - courses in, (27) 96; (31) 298; (32) 596; (33) 95, 297, 298; (34) 93, 94, 292, 395; (37) 395.
 - exercises in, (32) 290.
 - field trips in, (31) 394.
 - handbook, (26) 94, 191, 391.

Agriculture—Continued.

elementary—continued.

- laboratory manual, (29) 93; (33) 297.
- lessons in, (30) 94, 794, 795; (31) 394; (33) 597; (39) 692.
- manual, (31) 196, 599; (40) 795.
- pedagogical principles, (26) 691.
- teaching, (28) 491, 598; (31) 194, 791.
- textbook, (27) 897; (28) 298; (29) 193, 298; (30) 196, 496, 597, 598, 695, 795; (34) 196, 493, 598, 599, 793; (36) 692; (37) 795; (38) 196, 496.
- encyclopedia, (33) 793.
- European, observations on, (26) 895.
- experience v. investigations in, (34) 101.
- explosives in, (30) 589.
- for school and farm, (35) 93.
- for women teachers, (26) 898.
- forestry in, (27) 393.
- geographical atlas, (38) 895.
- geologic-agronomical maps in, (28) 619.
- German, as affected by climate, (27) 617.
- government aid to—
 - in Europe, (26) 896.
 - Finland, (28) 392.
 - Great Britain, (28) 595.
 - Ireland, (27) 897; (28) 689.
 - Netherlands, (30) 494.
 - Norway, (32) 392.
 - Russia, (28) 498.
 - Wales, (28) 99.
- graduate school, (26) 696; (27) 101; (28) 799; (30) 96; (31) 301; (32) 798; (34) 300, 699; (35) 401.
- graduate study in, (26) 10; (32) 9.
- graphic summary, (37) 595.
- higher council of in France, (30) 393.
- history of, (34) 689.
- home exercises in, (29) 598.
- home project courses in, (38) 897.
- home study course for teachers, (26) 497.
- importance and progress of, (29) 896.
- in Abyssinia, (30) 434.
- Alaska, (29) 791; (32) 89; (35) 295; (36) 791.
- Algeria, (33) 895; (40) 487.
- Algeria and Tunis, (40) 594.
- America and China, comparison, (27) 691.
- America, economic history, (37) 189.
- American Association for the Advancement of Science, (31) 604.
- Argentina, (27) 193; (28) 488; (31) 93, 296, 390, 595; (33) 295, 788; (36) 689; (37) 190.
- Australia, (26) 189; (30) 595; (31) 492; (33) 193; (36) 93, 791; (39) 192, 690.
- Austria, (27) 391.
- Bavaria, (26) 189.
- Belgian Kongo, (31) 596, 789; (38) 393; (40) 390, 392.
- Belgium, (33) 292.
- Berkshire, (40) 590.
- black belt of Alabama, (35) 794.
- Brazil, treatise, (26) 189.
- British Columbia, (31) 490; (32) 593.
- British East Africa, (26) 793; (37) 734.
- British Guiana, (40) 93, 487.
- British India with notes on Ceylon, Afghan-istan, and Tibet, (33) 895.
- Bulgaria, (33) 92.
- California, (35) 194; (36) 93.
- California, relation to 8-hour law, (32) 191.
- Canada, (26) 896; (33) 93; (36) 791.
- Canton, China, Christian College, (26) 699.
- Ceylon, (36) 393.
- Chile, (34) 491.
- China, (33) 395.
- China, Korea, and Japan, (27) 518.
- Connecticut, (34) 289.
- country life education, (29) 92.
- Crete, (39) 192.
- Cuba, (37) 591.
- Cyprus, (33) 200.
- Denmark, (27) 391; (28) 488; (29) 693; (30) 91; (31) 93, 491; (36) 791.
- Dutch East Indies, (35) 696.
- Egypt, (27) 193; (32) 894; (35) 794, 894.
- England, (30) 894; (31) 93, 94; (36) 594.
- England and Wales, (36) 789.
- England and Wales after the war, (37) 791.
- England, treatise, (28) 488.
- Europe after the war, (38) 401.
- Finland, (30) 599; (33) 396.

Agriculture—Continued.

- in Finland, improvement, (39) 898.
 Formosa, (31) 491.
 France, (27) 193; (37) 890; (38) 90, 896; (39) 424.
 France after the war, (40) 487, 590, 686.
 French colonies, (40) 590, 622.
 Germany, (29) 190, 896; (33) 594; (34) 689; (36) 291.
 Germany and France, review, (38) 293.
 Germany, handbook, (30) 594.
 Great Britain, (37) 595, 697.
 Great Britain, government aid to, (26) 101.
 Great Britain, improvement, (28) 192.
 Great Britain, state aid, (38) 594.
 Great Britain, treatise, (39) 592; (40) 387, 889.
 Great Britain under war conditions, (38) 102.
 Guiana, (31) 391.
 Harlem (Ill.) consolidated school, (31) 597.
 Hausa Land, northern Nigeria, (30) 896.
 Hawaii, (36) 291.
 Hokkaido, Japan, American influence upon, (33) 492.
 Illinois, Pike County, (33) 788.
 Imperial Valley, (36) 789.
 India, (27) 796; (36) 494; (37) 595.
 India, handbook, (34) 95; (40) 823.
 Indo-China, (39) 191.
 Ireland, (36) 594.
 Ireland, England, Germany, and Denmark, (31) 93.
 Italy, (33) 787; (40) 487, 891.
 Japan, (26) 896; (29) 729; (30) 896; (31) 491; (32) 894; (33) 695; (34) 92; (36) 594, 690.
 Java, (33) 196; (38) 735.
 Java and Madura, (32) 894.
 Korea, (30) 595; (34) 792; (36) 690; (39) 192.
 Latin America, (29) 198; (36) 699.
 Louisiana, (38) 91.
 Lower Alps, (33) 492.
 Macedonia, (40) 590.
 Madagascar, (32) 894.
 Madras, (37) 697; (39) 738.
 Maine, (38) 91.
 Michigan, (31) 595.
 Minnesota, early development, (33) 786.
 Morocco, (35) 91; (40) 194, 791.
 Navarre, (37) 891.
 Netherlands, (31) 596, 691; (34) 194.
 New England, (26) 897.
 New Jersey, handbook, (31) 196.
 New York, (28) 790; (40) 389.
 New Zealand, (27) 391; (31) 191; (33) 193, 395; (35) 795; (36) 690; (37) 791; (39) 690; (40) 195.
 North Carolina, (34) 288; (36) 494.
 northern Africa, (31) 789.
 northern New York, (35) 509.
 northwestern States, (29) 594.
 Norway, (29) 897; (30) 194; (31) 192; (33) 492, 594; (34) 92; (36) 896; (37) 891.
 Oklahoma, (38) 793.
 Oregon, (30) 791.
 Oxfordshire, treatise, (37) 291.
 Pacific Coast States, (34) 391.
 Palestine, (30) 799.
 Philippines, (35) 193; (36) 93; (37) 791.
 Pinar del Rio, Cuba, (36) 791.
 Porto Rico, (40) 690, 890.
 Portugal, (32) 894.
 Portuguese Angola, (36) 393.
 Red River Valley, Minnesota, (33) 593.
 Roman Tuscany, (33) 492.
 Roumania, (33) 695.
 Ruhr coal region of the Rhine, (31) 895.
 Russia, (30) 595, 896; (32) 288, 489; (33) 895.
 San Simon Valley, Arizona and New Mexico, (37) 486.
 Saxony, (32) 689.
 Scotland, (36) 291; (37) 891; (40) 590.
 Scotland and Ireland as affected by European war, (34) 298.
 Scotland, conference on, (38) 293.
 Serbia, (33) 594.
 South Africa, (31) 492; (35) 795; (40) 791.
 South Africa, improvement, (37) 389.
 South America and Western Europe, treatise, (31) 895.
 southern New York, highland region, (33) 511.

Agriculture—Continued.

- in Southern States, progress and possibilities, (29) 189.
 southwest Africa, (39) 896.
 Spain, (28) 89; (30) 595; (33) 292; (34) 689; (36) 688; (39) 690; (40) 487.
 Sudan, (40) 791.
 Sulphur Spring Valley, (32) 513.
 Sweden, (35) 395; (36) 690; (37) 93, 191.
 Switzerland, (38) 91, 596.
 Tennessee, (35) 795.
 the Alps, (27) 218.
 the Cotswolds, (31) 491.
 the South, (26) 592.
 the South, textbook, (40) 897.
 Transvaal and vicinity, (26) 450.
 Trinidad and Tobago, (27) 895.
 tropical America, (29) 896; (31) 595.
 Tropics, treatise, (32) 227.
 Tunis, (31) 492.
 Uganda, (34) 291.
 United Kingdom as affected by the war, (40) 487.
 United States, (31) 295; (33) 789; (34) 791.
 United States, graphic summary, (35) 191.
 United States, relation to rainfall, (33) 715.
 treatise, (32) 891.
 upper Wisconsin, (34) 431.
 Uruguay, (34) 92, 394.
 various countries, pamphlet, (30) 692.
 Victoria, (31) 296.
 Virgin Islands, (38) 608; (40) 391.
 Zanzibar, (38) 192.
 Indian, in Arizona, (37) 437.
 intensive, in tropical America, (34) 306.
 interesting high school boys in, (28) 692.
 international congress of, (29) 101.
 international institute of, (29) 1; (33) 91; (39) 497, 690.
 laboratory manual, (28) 393; (34) 94.
 lessons on, (28) 393, 693.
 manual, (28) 392; (31) 494.
 meteorological observations in, (31) 614.
 meteorology in, (34) 606.
 method of least squares in, (30) 632.
 net output from, in England, (37) 595.
 of Hidatsa Indians, (38) 694.
 of Indo-Germanic people, history, (27) 691.
 on reclamation projects, (37) 595.
 on Truckee-Carson project, (28) 839.
 persons engaged in, in United States, (32) 190.
 phenology and climatology in, (26) 613.
 physics, chemistry, and bacteriology in, (32) 898.
 postal savings funds for, (29) 895.
 power for, (27) 588.
 prevention of waste in, (40) 589.
 progress in, (32) 98.
 Prussian boards of, (40) 891.
 reading courses in, (26) 297; (29) 598; (31) 394 (32) 795; (33) 695.
 records in, (31) 490.
 relation to—
 cattle feeding, (28) 365.
 climate, (28) 26; (34) 114.
 climate and soils, (36) 417.
 entomology, (33) 152.
 eugenics, (36) 92.
 European war, (33) 93.
 geology, (30) 212.
 manufacturing in New England, (36) 391.
 native vegetation in Peru, (36) 27.
 phenology and climatology, (29) 15.
 railroads, (28) 92.
 requirement for degree in, (28) 11.
 review of literature, (28) 536; (31) 392.
 revival on volcanic ash, (28) 219.
 role of infinitely small amounts of chemicals in, (28) 125; (29) 129.
 role of state in, treatise, (40) 790.
 school and home projects in, (35) 195.
 weather, (28) 414, 716.
 school exercises in, (36) 596.
 science and practice in, (36) 2, 604.
 secondary course in, (30) 898; (38) 496.
 short courses in Canada, (35) 695.
 Spanish, society for improvement, (26) 498.
 Swedish, promotion, (30) 494.
 teaching, (33) 494.
 test of efficiency in, (28) 692.

Agriculture—Continued.

- textbook, (26) 94; (27) 598; (28) 826, 897; (29) 93; (31) 693; (33) 95, 494, 597, 791, 898; (35) 92, 499; (36) 394; (37) 795, 888; (39) 898; (40) 492, 897.
 theories of Karl Marx, (29) 491.
 theory of errors in, (30) 599.
 training schools in, (29) 199.
 treatise, (26) 189; (28) 690; (29) 594; (32) 131, 429; (34) 689; (37) 728.
 tropical—
 bibliography, (26) 629.
 development, (31) 297.
 manual, (30) 395.
 Pacific coast institute, (40) 294.
 technical education in, (34) 491; (36) 896.
 textbook, (33) 397; (35) 896.
 treatise, (40) 622.
 use of electricity in, (26) 789; (27) 89, 292, 891; (33) 890.
 use of explosives in, (26) 91; (29) 183.
 vocational training in, (31) 692.
 women's place in, (31) 98.
 women's share in, (26) 299.
 yearbook, (34) 494.

Agrilus—

- anxius, *see* Birch boier, bronze.
 bilineatus, *see* Chestnut borer, two-lined.
 burkei n.sp., description, (37) 566.
 champlaini, notes, (28) 554.
 dozieri n.sp., description, (40) 759.
 egenus, notes, (35) 356.
 hastulifer, life history and control, (34) 361.
 politus infesting roses, (33) 256.
 politus, remedies, (31) 60.
 sinuatus, *see* Pear tree borer, sinuate.
 spp., habits, (32) 250.
 spp., notes, (27) 755; (28) 158.
 viridis fagi in New Jersey, (34) 355.
 vittaticollis, studies, (32) 248.

Agrimony, occurrence of barium in, (26) 432.

Agriolimnax agrestis—

- feeding habits, (34) 458.
 injurious in gardens, (39) 655.
 notes, (40) 56.

Agriophara rhombota, notes, (30) 660.

Agriotes—

- (Elatér) segetis, notes, (34) 757.
 lineatus, notes, (29) 858.
 lineatus, remedies, (26) 256.
 mancus larvae, fumigation, (40) 256.
 mancus, notes, (26) 147; (29) 252; (32) 555.
 obscurus, larval and pupal stages, (37) 765.

Agronomy of Sahel, (31) 814.

Agromyza—

- destructor n.sp., description, (36) 658.
 destructor, studies, (40) 457.
 diminuta, notes, (27) 155.
 fabalis, notes, (30) 160.
 gayi n.sp., description, (37) 460.
 graminis, notes, (27) 560.
 inequalis n.sp., description, (31) 456.
 key, (39) 661; (40) 263.
 larvae on artichoke, (40) 58.
 laterella, studies, (40) 169.
 melampyga, notes, (26) 147.
 n.spp., descriptions, (37) 764.
 nigripes injurious to alfalfa, (33) 555.
 parvicornis, *see* Corn leaf miner.
 phaseoli, notes, (29) 637; (30) 458; (32) 350.
 pruinosa, investigations, (30) 855.
 pruni n.sp., description, (33) 749.
 pusilla, studies, (29) 857; (39) 362.
 schineri, notes, (29) 159.
 scutellata, notes, (38) 653.
 scutellata on cotton, (33) 255.
 simplex, *see* Asparagus miner.
 spp., parasites of, (29) 359; (30) 361.
 spp., related to simplex, (40) 263.
 spp., studies, (33) 749.

Agromyzaphagus detritentosus n.g. and n.sp., description, (27) 60.

Agromyzidae, synopsis, (31) 552.

Agromyzinae, synopsis, (29) 657; (30) 254.

Agronomy—

- American Society of, (27) 106.
 bibliography, (28) 638.
 development and proper status, (26) 434.
 fundamental principles in, (32) 199.
 problems in, (36) 197.

Agronomy—Continued.

- terminology, (28) 537; (35) 30; (36) 827.
 textbook, (34) 598.

Agropyron—

- occidentalis, culture under dry-land conditions, (31) 429.
 repens, description and structure, (31) 37.
 repens, monograph, (29) 141.
 repens, plant food absorption and growth, (32) 630.
 scabrum, analyses, (30) 555.
 spp., culture experiments, (27) 234.
 spp., digestibility, (32) 770.
 spp., identification, (29) 741.
 spp., identification of seeds, (32) 436.
 spp., rust spores in seeds of, (30) 241.
 tenerum, seedling on ranges, (30) 35.

Agrostemma githago—

- notes, (30) 236.
 rôle of saponins in, (33) 524.
 seed weight, (37) 831.
 toxicity, (39) 892.

Agrostis—

- alba, analyses, (29) 270.
 alba, seedling on ranges, (30) 35.
 ash constituents, (30) 334.

Agrotis—

- hand picking and trapping, (32) 59.
 saucia, notes, (33) 252.
 segetum—
 artificial infestation with parasitic Hymenoptera, (33) 155.
 biology, (32) 59.
 injurious to tobacco, (31) 60.
 life history and remedies, (31) 157.
 remedies, (33) 748.
 spp., biology, (32) 59.
 spp., notes, (27) 453, 656; (28) 555.
 ypsilon, *see* Cutworm, black.

Agrypnus fuscipes, notes, (29) 858.

Aguman, description, (30) 557.

Ahnfeldtia plicata, analyses, (37) 814.

Allanthus altissima, history and botanical notes, (35) 747.

Air—*see also* Atmosphere.

- alveolar, sampling, (34) 369.
 and water, review of literature, (28) 115.
 ascent above active volcanoes, (33) 118.
 bacteria in, (34) 208.
 bacteriology of, (26) 174.
 bath, electric, description, (38) 9.
 breathed, effect on metabolism, (32) 663.
 circulation in forest soils, (31) 26.
 cold, drainage, (27) 116.
 conditioning apparatus, description, (36) 152.
 cooling near the ground at night, (40) 314.
 currents, ascending, formula for adiabatic changes in, (34) 207.
 drainage in river valleys, (27) 413.
 drainage, notes, (32) 614.
 dry and moist, effect on gaseous metabolism, (27) 869.
 examination, (32) 117.
 exclusion, effect on trees, (31) 348.
 expired—
 in relation to ventilation, (31) 363.
 moisture content, (32) 764.
 reinspiration, (31) 70.
 temperature of, (31) 466.
 toxic bodies in, (33) 167.
 water content and temperature, (33) 567.
 humidification, (31) 70.
 humidity—
 of, (33) 806.
 of in mines, (29) 121.
 of measurement, (34) 416.
 relation to nocturnal cooling, (40) 715.
 in textile mills, hygienic condition of, (31) 70.
 indoor and outdoor, microbial content, (32) 211.
 introduction into jugular vein, (27) 886.
 mechanics within cyclones and anti-cyclones, (32) 25.
 methods of analysis, (29) 412.
 methods of bacterial analysis, (33) 610; (34) 183.
 microbiology of, (26) 372.
 mixing, (27) 316, 616.
 movement—
 control in transpiration experiments, (38) 223.

Air—Continued.

- movement—continued.
 - effect of earth's rotation on, (32) 25.
 - effect on illumination of foliage, (33) 826.
 - through soils, (26) 619.
- of antarctic region, studies, (30) 818.
- of Buenos Aires, bacteriological study, (37) 513.
- physics of, (40) 616.
- pollution in dairy barns, (29) 474.
- pressure over Europe, (34) 14.
- rate of flow in soils, (34) 216.
- respired, composition, (28) 462.
- respired, heat removed by, (28) 569.
- routes and their regulation, (37) 807.
- soil, composition and characteristics, (33) 618.
- temperature—
 - and solar radiation intensities, relation, (32) 24.
 - reduction to true mean, (37) 116.
 - relation to soil temperature, (34) 15.
 - studies, (28) 116.
- upper—
 - explorations, (32) 810.
 - illusions of, (35) 317.
 - of Australia, (36) 19.
 - study by means of telescopes, (34) 614.
 - washing, studies, (30) 790.
- water, and food sanitation, treatise, (33) 258.
- Aira, ash constituents of, (30) 334.
- Aitonia capensis—
 - analyses and digestibility, (27) 871.
 - microphylla, analyses and digestibility, (32) 167.
- Ajowan—
 - bran, analyses, (27) 570.
 - seed, thymol content, (39) 712.
- Ajuga reptans, betains in, (27) 204.
- Akebi seed, oil of, (37) 109.
- Akongé, description, (30) 35.
- Akoon seeds, notes, (32) 613.
- Akron (Colo.) field station, description, (36) 33.
- Alabama argillacea—
 - notes, (26) 856; (27) 756; (28) 60, 158, 762; (29) 456; (30) 356, 657; (31) 350; (39) 862.
 - outbreak in Peru, (29) 356.
 - remedies, (26) 757.
 - studies, (27) 556.
- Alabama—
 - Canebrake Station, notes, (27) 696; (37) 97, 299, 797; (38) 96.
 - College, notes, (27) 300, 799; (28) 396; (29) 195, 300, 497, 697; (31) 496; (32) 395, 694; (33) 496; (34) 198, 495; (35) 397; (36) 196, 397; (37) 496, 700.
 - College Station, financial statement, (27) 396, 599; (28) 796.
 - College Station, notes, (26) 96; (27) 300, 799; (28) 396; (29) 195, 497, 697; (32) 395, 694; (34) 198, 495; (36) 196, 397; (37) 97, 496, 700.
 - College Station, report, (32) 496, 795, 899; (34) 693; (35) 299; (36) 693; (37) 599; (38) 899; (40) 796.
 - College Station, report of director, (27) 396, 599; (28) 796.
 - River, average stream flow, (27) 316.
- Alanin—
 - action upon esters, (31) 711.
 - as source of ammonia, (29) 723.
 - heat of combustion, (26) 160.
 - in yeast protein, (36) 501.
 - influence on action of alkali on glucose, (37) 109.
 - ingested, metabolism rate of, (33) 755.
 - ingestion, effect on metabolism, (28) 867.
- δ -alanin and δ -valin, separation, (30) 313.
- Alaptus—
 - cricococi, parasitic on orange scale, (26) 554.
 - immaturus n.sp., description, (37) 855.
- Alaria n.spp., descriptions, (39) 791.
- Alaska Stations—
 - notes, (35) 397.
 - report, (28) 493; (29) 793; (33) 698; (36) 497; (39) 196.
 - work of, (38) 602.
- Albinism—
 - in corn, (33) 131.
 - in inbreeding, (28) 531.
 - in man, monograph, (31) 467.
 - inheritance in cereals, (31) 329.

Albizzia—

- anthelmintica, analyses and digestibility, (27) 871; (32) 167.
- insects affecting, (26) 553.
- Albugo—
 - (Cystopus) sp. on sweet potatoes, (37) 452.
 - tragopogoni on salsify, (32) 341.
- Albumin—
 - blood and muscular, differentiation, (38) 583.
 - coagulation by pressure, (32) 417.
 - constitution, (30) 110.
 - determination in milk, (31) 114.
 - dextrorotatory, in organic nature, (31) 607.
 - dynamic action on kidneys, (26) 465.
 - effect on reaction of iron salts, (28) 410.
- egg—
 - and serum, density and solution volume, (31) 804.
 - coagulation by heat, (26) 306.
 - coagulation by ultraviolet light, (30) 110.
 - denaturation rate in alkali, (29) 501.
 - germicidal power, (27) 763.
 - hydrolysis, (28) 607.
 - identification in solutions, (26) 201.
 - in baking powders, (36) 561.
 - lysin content, (31) 559.
 - nitrogen distribution in, (38) 310.
 - nutritive value, (31) 264.
 - role in glycogen formation, (31) 763.
 - studies, (39) 801.
 - toxicity and nutritive value, (40) 463, 464, 562.
 - use in baking powder, (32) 356, 762.
- fermentation in yeast, (33) 824.
- globulin ratio in antitoxic immunity, (39) 388.
- heat coagulation and solution, (29) 715.
- humification, (34) 516; (38) 26.
- labile, relation to living protoplasm, (36) 225.
- milk in infant feeding, (34) 258.
- production of anaphylaxis by, (26) 374.
- silicates, colloidal, nature, (32) 420, 421.
- use in food products, (34) 167.
- water, effect on gastric secretion, (26) 466.
- Albuminous—
 - bases, isolation from soils by hydrolysis, (35) 212.
 - crystalloids in potato leaves, (33) 824.
- Albumoses in body tissues and blood, (38) 366.
- Alcides bubo, egg-laying habits, (38) 359.
- Alcohol—
 - amyl, use in milk fat tests, (35) 507.
 - anhydrous, preparation, (35) 110.
 - as fuel, (32) 885.
 - as substitute for gasoline, (32) 788.
 - boiling, extracting plants with, (26) 108.
 - coagulation of milk by, (33) 113.
- denatured—
 - as a decarbonizer and engine cleanser, (29) 787.
 - detection, (30) 211.
 - fuel value, (28) 384.
- detection in fermenting fluids, (26) 308.
- determination, (38) 315.
- determination—
 - from specific gravity, (31) 505.
 - in fermentation mixtures, (36) 508.
 - presence of ketones, (29) 716.
 - presence of phenol, (35) 13.
 - vinegar, (40) 712.
 - wine, (31) 505.
- wine, beer, etc., (30) 508.
- disinfection, theory and practice, (40) 581.
- effect of X-rays on fermentation, (27) 231.
- effect on—
 - ammonia fixing power of soils, (27) 323.
 - antigenic properties of horse meat protein, (30) 779.
 - catalase of blood, (40) 364.
 - egg development, (26) 772.
 - egg yolk of pigeons, (37) 773.
 - formation of carbon dioxide by dead yeast, (37) 203.
 - gastric secretion, (26) 466.
 - germ cells of fowls, (39) 177.
 - paunch movements in ruminants, (27) 68.
 - permeability of plant tissues, (28) 732.
 - psychological processes, (36) 763.
 - seed germination, (26) 131.
 - soils, (37) 519.

Alcohol—Continued.

- effect on—continued.
 - solution of casein by sodium hydroxid, (36) 108.
 - estimation in spirituous liquors, (40) 15.
 - ethyl, *see* Ethyl alcohol.
 - extraction from garbage, (37) 590.
 - extraction from plants, (27) 407.
 - forcing plants with, (28) 837.
 - formation by sprouting wheat, (30) 522.
 - from—
 - cactus, (33) 234.
 - corn and potatoes, comparison, (28) 715.
 - grapefruit, (39) 203.
 - horse chestnuts and acorns, (38) 411.
 - millet, (32) 117.
 - molasses, (38) 508.
 - sulphite liquor waste, (35) 14.
 - in corn silage, (28) 109.
 - homemade root beer, (35) 557.
 - silage, (28) 608.
 - soils, (32) 718.
 - industry in Germany, (29) 209; (32) 315, 613.
 - industry in Philippines, (29) 118; (30) 16.
 - ingestion as protection against cold, (35) 474.
 - injurious effect on plant cells, (34) 333.
 - lamps, tests, (27) 388.
 - manufacture—
 - and use in Australia, (38) 714.
 - from agaves, (26) 415.
 - helianthus tubers, (27) 616.
 - nipa palm, (29) 414.
 - raw materials, (38) 317.
 - sugar beets, (26) 213, 512, 809.
 - vine shoots, (26) 613.
 - zapupe, (26) 415.
 - metabolism, rapidity of, 764.
 - methods of analysis, (27) 205; (31) 806.
 - methyl, *see* Methyl alcohol.
 - microbiology of, (26) 372.
 - oxidation by seedlings, (35) 634.
 - physiological value, (29) 665.
 - power, crops for production, (40) 524.
 - production by yeast, (40) 326.
 - production by yeast, treatise, (29) 714.
 - psychological effects, (34) 663.
 - recovery from potash determination, (40) 806.
 - relation to neuritis in fowls, (28) 765.
 - solutions—
 - effect on germination of seeds, (27) 330.
 - refractive indexes, (27) 499.
 - sterilization of soils by, (32) 816.
 - substituting for sucrose in fixed diet, (36) 364.
 - test for milk, (33) 112, 113.
 - toxicity, (28) 661.
 - trichlorotertiarybutyl, determination, (39) 207.
 - use in plant respiration, (28) 428.
 - use in the Tropics, (30) 260.
 - value in the diet, (29) 664.
- Alcoholic—
- beverages—
 - effects in diabetes and states of depression, (40) 364.
 - origin of methyl alcohol in, (40) 204.
 - fermentation—*see also* Fermentation.
 - chemistry of, (34) 711.
 - in seeds, (27) 220.
 - specimens, keeping, (36) 252.
- Alcoholized fowls and eggs, studies, (40) 470.
- Alcohols—
- determination, (40) 804.
 - determination in silage, (40) 413.
 - polyatomic, as sources of carbon for lower fungi, (31) 13.
 - polyatomic, as sources of carbon for molds, (30) 226.
- Alcohol-water mixtures, boiling and condensing points, (35) 11.
- Aldehyde—
- catalase, origin and use, (28) 19.
 - detection in ethyl alcohol, (29) 312.
 - unidentified, from soils, (28) 418.
- Aldehydes—
- color test for, (40) 114.
 - effect on protein hydrolysis, (38) 201.
 - formation in wine, (37) 805.
 - in soils, (32) 718; (40) 22.
 - in soils, harmful effect, (31) 620; (36) 424.

Alder—

- analyses, (38) 309.
 - analyses and nutritive value, (35) 164.
 - blight aphid, life history, (27) 257.
 - fla-beetle, biology, (39) 64.
 - fla-beetle, notes, (29) 252, 761; (40) 357.
 - leaf disease, new, notes, (27) 548.
 - red, as forest tree, (38) 349.
 - red, notes, (27) 846.
 - red, nutrient absorption in, (32) 748.
 - rust, notes, (26) 852.
 - seed, agglutinating properties, (31) 774.
 - wood disease, (40) 844.
- Aldopentoses, crystallography and optical properties, (40) 202.
- Aldoses—
- and ketoses, separation, (28) 504.
 - determination, (34) 11.
- Ale, composition, (36) 864.
- Alebra albostriella, notes, (34) 752.
- Alectra arachidis, notes (29) 347.
- Aleirhogas n.subg., description, (39) 663.
- Aleochara bilineata, life history, (33) 861, 862.
- Aleurites—
- fordii, culture in United States, (30) 536.
 - fordii, notes, (28) 843.
 - moluccana, analyses, (31) 631.
 - triloba nuts, analyses, (29) 811.
- Aleurobius farinae—
- notes, (40) 855.
 - studies, (39) 664.
- Aleurocanthus—
- n.spp., descriptions, (35) 552.
- woglumi—
- in Cuba, (38) 158.
 - notes, (37) 462; (38) 158, 459, 557.
 - remedies, (36) 457.
 - studies, (39) 864.
- Aleurodicus—
- cardini n.sp., description, (27) 455.
 - destructor, notes, (27) 455.
- Aleurothrixus—
- howardi—
 - in Florida, (40) 856.
 - notes, (27) 255; (31) 751; (37) 659.
 - studies, (29) 251; (33) 59.
 - porteri n.sp., description, (35) 552.
- Aleurothizus timberlakei n.g. and n.sp., description (31) 755.
- Alexin, effect on protein metabolism, (30) 478. *
- Aleyrodes—
- atriplex n.sp., description, (26) 859.
 - citri, *see* White fly, citrus.
 - horridus, notes, (30) 657.
 - howardi, *see* Aleurothrixus howardi.
 - mori, *see* Tetraleurodes mori.
 - olivinus, *see* Tetraleurodes olivinus.
 - packardii, notes, (33) 58.
 - spp., notes, (26) 348; (27) 455; (34) 60.
 - spp., remedies, (27) 357.
 - tabaci, notes, (28) 654.
 - trachoides n.sp., description, (27) 455.
 - vaporariorum, *see* White fly, greenhouse.
- Aleyrodidae—
- classification, (29) 54; (31) 755; (36) 755.
 - fungus parasites of, (28) 60.
 - of British Guiana, (36) 252.
- Aleyrodids, remedies, (38) 58.
- Alfalfa—
- analyses, (26) 469, 770; (28) 463, 464, 669; (31) 524; (32) 171; (34) 169, 467, 667; (35) 562; (37) 767.
 - anatomy, (31) 330.
 - and corn for fattening lambs, (26) 73.
 - and sweet clover silage, chemistry, (40) 10.
 - Arabian, notes, (29) 33.
 - as affected by—
 - bog water, (28) 733.
 - calcium and magnesium, (35) 726.
 - sulphur, (38) 221.
 - as cause of sterility in dairy cattle, (34) 269.
 - cover crop for orchards, (33) 240.
 - forage crop, (31) 829.
 - grazing crop for pigs, (32) 224; (37) 679.
 - green manure, (32) 225; (35) 629; (37) 320; (39) 423.
 - hay crop, (39) 333.
 - honey-producing plant, (40) 65.
 - orchard crop, (40) 340.
 - orchard shade crop, (35) 236.

Alfalfa—Continued.

- as pasture and meadow crop, (39) 135.
- pasture crop, (39) 130, 474; (40) 371, 470.
- sand binder, (29) 427.
- silage crop, (31) 829; (39) 134.
- soil binder, (28) 230.
- soil improver, (30) 37.
- winter cover crop, (40) 133.
- bacteria as affected by—
 - nitrates, (39) 338.
 - reaction, (39) 26, 722.
- bacterial—
 - blight in Utah, (31) 642.
 - disease, investigations, (26) 646.
- behavior in acid soils, (37) 422.
- blue, germination as affected by fertilizers, (29) 327.
- booklet, (31) 831.
- bread, analyses, (26) 660.
- breeding experiments, (26) 633, 734; (27) 528; (28) 42; (32) 532; (33) 31; (34) 34; (37) 827; (39) 126, 635; (40) 735.
- breeding, physiological correlations and climatic reactions in, (31) 629.
- butterflies affecting, (26) 655.
- caterpillar, studies, (32) 57.
- chart for schools, (31) 693.
- chopped, analyses, (29) 570.
- chopped, feeding value, (39) 783.
- coloring matters in, (28) 110.
- composition, (32) 533.
- composition as affected by—
 - irrigation, (28) 332.
 - maturity and curing methods, (36) 201.
- composition at different stages, (39) 836.
- conserving with straw, (39) 269.
- continuous culture, (40) 419.
- cooperative experiments, (27) 835; (28) 334, 737; (29) 331.
- cost of production, (26) 830; (30) 333; (32) 527; (34) 137; (37) 231.
- crane fly affecting, (28) 160.
- creatinin in, (26) 419.
- crown gall—
 - notes, (30) 348; (33) 742; (34) 241; (35) 245; (36) 747; (40) 844.
 - studies, (28) 150.
- crown rot, notes, (28) 544.
- crown wart, studies, (36) 543.
- culture, (26) 40, 633, 734; (27) 33, 235, 299, 337; (28) 634; (29) 32, 633; (30) 36, 37, 335; (31) 37, 227, 265, 330, 735, 831; (32) 132, 527, 828; (33) 97, 230, 635; (34) 35, 138, 139, 528, 630; (35) 33; (38) 434; (39) 834.
- culture—
 - and history, (35) 830.
 - experiments, (26) 38, 422, 434, 830; (27) 31, 430, 431, 735; (28) 431, 532, 734; (29) 225, 226, 631, 735, 736; (30) 133, 134, 229, 632; (31) 828; (32) 36, 132, 133, 430, 431, 526, 528, 529, 530, 730; (33) 229, 634, 828, 830; (34) 34, 227, 228, 229; (35) 228, 337; (36) 32, 131, 132, 332, 735; (37) 30, 226, 227, 535, 729; (38) 132, 133, 230, 334, 631, 632, 634, 827, 829, 830; (39) 124, 126, 128, 130, 131, 227, 334, 435, 436, 437, 530, 735, 737, 834, 835; (40) 32, 328, 430, 624, 735.
 - experiments in Canada, (40) 228.
 - handbook, (40) 526.
 - in Alabama and Mississippi, (27) 33.
 - Alberta, (27) 533.
 - Alberta and Saskatchewan, (32) 828.
 - apple orchards, (38) 443.
 - eastern United States, (36) 95.
 - Illinois, (30) 435.
 - Imperial Valley, (38) 184.
 - India, (39) 230.
 - Iowa, (36) 635; (38) 529.
 - Kansas, (37) 439.
 - Michigan, (28) 830.
 - New England, (33) 526; (36) 335.
 - New Jersey, (40) 137.
 - New Mexico, (40) 18.
 - North Carolina, (31) 132.
 - Ohio, (26) 131, 331.
 - Porto Rico, (29) 631.
 - Rhodesia, (27) 32, 637.
 - rows, (34) 735.
 - sand hills of Nebraska, (35) 827.
 - Scotland, (26) 535.

Alfalfa—Continued.

- culture—continued.
 - in southern Mississippi, (28) 231.
 - Texas, (40) 729.
 - the Southwest, (32) 532.
 - Uruguay, (30) 733.
 - Washington, (40) 731.
 - western Nebraska, (35) 439.
 - Wisconsin, (28) 42; (34) 431; (37) 440.
 - Wyoming, (37) 334.
 - on alkali soil, (38) 118.
 - on Yuma reclamation project, (29) 226.
 - under dry farming, (26) 828; (30) 435; (31) 429; (33) 632; (34) 734; (36) 528, 529.
 - under irrigation, (34) 528.
 - cut at different dates, shrinkage, (33) 430.
 - cutting experiments, (28) 432.
 - cutworms affecting, (29) 158; (36) 53.
 - decomposition in soil, (40) 214.
 - diastase of, (32) 502.
 - digestibility, (30) 171.
- diseases—
 - descriptions, (30) 351.
 - notes, (28) 52; (29) 243; (31) 841; (32) 532, 543; (35) 245; (36) 543; (39) 149, 532.
 - of Western Australia, (33) 846.
 - studies, (33) 544; (35) 544.
- ditcher, description, (32) 888.
- dodder in Colorado, (40) 536.
- dodder, remedies, (29) 561.
- downy mildew, description, (26) 846.
- drought resistance in, (26) 632; (30) 526; (33) 31.
- effect of frequent cutting on water requirement, (33) 230.
- effect on—
 - fetal development, (33) 266.
 - milk and butter, (34) 570.
 - nitrification in soils, (29) 317.
 - nitrogen and carbon content of soils, (40) 719.
 - nitrogen content of soils, (40) 319, 722.
 - soil bacteria, (37) 421.
 - soil fertility, (29) 633.
 - soil moisture, (29) 634; (38) 418.
 - succeeding crops, (32) 223; (39) 127, 130, 436; (40) 331, 430, 432.
 - yield of sugar beets, (29) 137.
- ensiling with corn, (36) 76.
- enzymes in, (32) 410.
- feeding value, (34) 867; (40) 370.
- feeds, analyses, (29) 467; (30) 671.
- fertilizer experiments, (26) 422, 631; (27) 32, 233, 321; (28) 325, 737; (29) 737; (30) 134, 230, 335, 733, 820, 829; (31) 37, 133, 228, 421, 424, 735; (32) 133; (33) 33, 635; (34) 138; (35) 520; (36) 121, 626, 829; (37) 33, 133, 215, 535; (38) 131, 218, 431, 630; (39) 427, 436, 737, 816; (40) 32, 319, 624, 735.
- flour, studies, (40) 762.
- food value as affected by rapid curing, (32) 502.
- for irrigated lands of Colorado, (26) 734.
- for pigs, (31) 568; (32) 569; (36) 370, 767.
- for sheep, (29) 572.
- Fusarium wilt, notes, (39) 548.
- gall midge, notes, (27) 161.
- germination—
 - as affected by fertilizers, (29) 327.
 - of hard seeds, (27) 841.
 - studies, (32) 231.
- graphic summary of seasonal work, (39) 495.
- grasshoppers affecting, (32) 553.
- grasshoppers, notes, (35) 657.
- green—
 - analyses, (29) 467.
 - clover worm on, (39) 865.
 - effect on taste of milk, (39) 281.
 - fertilizing value, (34) 219.
 - manure for, (36) 133.
- growth and nitrogen-fixing power on acid soils (36) 514.
- growth as affected by—
 - alkali, (34) 125; (36) 118.
 - dandelions, (39) 37.
 - fertilizer salts, (29) 329.
 - phosphates, (37) 828.
 - sulphur, (32) 724.
- hardiness in, (28) 737; (35) 229.
- hardy, notes, (28) 194.

Alfalfa—Continued.

- harvesting—
 - and shrinkage, (36) 132.
 - at different stages, (36) 171.
 - with sheep, (38) 68.
- hay—
 - amylolytic activity, (32) 503.
 - analyses, (26) 369, 665; (27) 170; (28) 265; (29) 370; (31) 437; (33) 469, 568, 761; (34) 164, 469; (38) 376.
 - analyses and feeding value, (30) 733.
 - and corn for lambs, (31) 867.
 - and silage for beef production, (33) 373.
 - and soy beans for milk production, (32) 265.
 - artificial curing, (28) 830.
 - as source of nitrogen in rations, (28) 264.
 - ash analyses, (29) 861.
 - box for feeding, (27) 899.
 - caps for, (39) 687.
 - chloroform extract of, (31) 71.
 - commercial grades, (32) 533.
 - composition, (27) 668.
 - composition as affected by irrigation, (29) 139.
 - digestibility, (27) 669; (28) 363; (31) 863; (36) 470; (37) 168; (39) 475.
 - effect on melting point of milk fat, (37) 73.
 - effect on milk flow, (34) 570.
 - energy value, (33) 72; (40) 365.
 - feeding value, (39) 73, 782; (40) 75.
 - for calves, (29) 771.
 - dairy cattle, (30) 72; (32) 367.
 - horses, (29) 370.
 - lambs, (29) 272, 870, 871; (32) 463.
 - milk production, (33) 382; (40) 573.
 - pigs, (33) 670; (35) 478.
 - range steers, (32) 467.
 - work horses, (36) 171; (38) 676.
 - grades of, (34) 528.
 - green, brown, and black, (40) 369.
 - ground, feeding value, (39) 778.
 - handling, (29) 633; (37) 599.
 - isolation of stachydrin from, (39) 610.
 - making and baling, (39) 231.
 - manurial value, (40) 127.
 - mineral constituents, digestibility, (40) 769.
 - nitrification, (31) 724.
 - nutritive value, (27) 659.
 - stewed, (39) 73.
 - v. alfalfa silage for dairy cows, (31) 77.
 - v. corn for cows, (32) 74, 863, 871.
 - v. cowpea hay for cows, (29) 876.
 - v. green alfalfa for cows, (34) 180.
 - v. oat straw for steers, (36) 269.
 - histological identification, (30) 631.
 - hopper, three-cornered, notes, (35) 657.
 - hopper, three-cornered, studies, (32) 652.
 - hybrid origin, (38) 332.
 - hybridization, (31) 831.
 - hybridization, field method, (33) 338.
 - hybrids, machine transplanted, (39) 337.
 - improvement, (32) 630.
 - in dry-farm rotations, (39) 131.
 - in grass mixtures, (37) 735.
 - inoculation, (34) 528; (36) 197; (39) 336, 338; (40) 328.
 - inoculation experiments, (26) 535; (27) 335; (28) 426, 519; (29) 332; (31) 735; (32) 433; (33) 633; (35) 336; (36) 335; (38) 134.
 - insects affecting, (27) 155; (31) 648; (32) 532; (33) 555; (36) 152; (39) 358, 359, 532.
 - irrigation, (28) 484; (31) 328; (34) 282.
 - irrigation—
 - experiments, (27) 531; (28) 130, 133, 135, 827; (29) 32, 138, 139, 226; (30) 34, 886; (31) 829; (32) 186, 430; (33) 229, 390, 634, 828, 830, 884; (34) 785; (36) 886; (37) 30, 32, 54, 435, 639; (38) 184, 434, 633; (39) 132, 338; (40) 431.
 - in Sacramento Valley, (37) 586.
 - ketones from, (26) 802.
 - laccase, studies, (34) 225.
 - land plaster for, (40) 730.
 - leaf—
 - blotch, yellow, studies, (39) 354.
 - hopper, notes, (29) 252.
 - protein, nutritive value, (39) 666.
 - leaf spot disease—
 - new, in America, (33) 848.
 - notes, (31) 746; (32) 443; (36) 735.

Alfalfa—Continued.

- leaf spot disease—continued.
 - studies, (36) 450.
 - treatment, (30) 538.
- leaf weevil—
 - bird and other vertebrate enemies of, (31) 655.
 - notes, (31) 655.
 - parasites of, (31) 61.
 - relation to *Pseudomonas medicaginis*, (31) 642.
- lime and phosphorus content, (26) 873.
- liming experiments, (28) 724; (35) 229; (39) 336, 435, 737, 738; (40) 126, 134, 322, 328.
- looper—
 - notes, (28) 253; (32) 651; (34) 255.
 - studies, (28) 253; (39) 659.
- manuring experiments, (40) 430, 432.
- meadow culture experiments, (40) 136.
- meal, analyses, (26) 72, 165, 362, 468, 568, 665, 714, 768, 873; (27) 170, 469, 570, 670, 774, 872; (28) 265, 364, 464, 572; (29) 270, 367, 467, 570, 666, 769; (30) 67, 68, 169, 565, 868; (31) 73, 168, 366, 467, 663, 863; (32) 169, 568, 667, 862; (33) 71, 371, 568, 665, 870; (34) 72, 169, 263, 371, 467, 469, 566, 665, 767; (35) 373, 374, 562, 867; (36) 65, 167, 268, 667, 765; (37) 268, 471, 767; (38) 67, 368, 369, 665; (39) 167, 270, 370; (40) 72, 470, 571, 665.
- meal, fertilizing value, (34) 129.
- moisture content and shrinkage, (34) 828.
- nectar secretion, (37) 633.
- nitrogen and mineral constituents, (29) 32.
- nitrogen assimilation, (39) 738.
- nodule bacteria of, (32) 33, 327.
- northern v. commercial seed, (33) 226.
- nurse crop for, (29) 226, 425; (37) 226.
- on alkali soil, (39) 215; (40) 32.
- on reclaimed swamp, (40) 231.
- pasture for—
 - pigs, (31) 470; (33) 379, 871; (34) 173; (36) 170, 171; (38) 372; (39) 173, 272, 372, 375, 478, 479, 777, 778, 878; (40) 72, 75, 471, 472, 771.
 - sheep, (36) 169.
- Pasturing—
 - experiments, (33) 230, 379, 429, 871; (38) 67.
 - in Arizona, (34) 169.
 - off, (40) 430.
- Phytonomus variabilis affecting, (26) 151.
- pollination—
 - by bees, (39) 661; (40) 264, 760.
 - experiments, (37) 735.
 - studies, (31) 133; (37) 30.
- proliferation in, (28) 829.
- Pseudopeziza leaf spots, (37) 751.
- rate of seeding tests, (27) 335.
- residues, nitrogen content, (28) 217.
- root—
 - development as affected by clipping, (36) 832.
 - diseases, studies, (38) 646.
 - rot, notes, (35) 846.
 - rot, treatment, (39) 852.
 - stock development in, (34) 735.
 - system, (37) 827.
- rotation experiments, (33) 429, 829; (38) 129; (40) 331.
- rust, description and treatment, (27) 445.
- sampling device for, (37) 711.
- saponin, studies, (40) 607.
- Sclerotium disease, notes, (29) 845; (39) 753.
- seed—
 - analyses, (26) 739; (30) 733.
 - as affected by sulphuric acid, (27) 524.
 - chalcid fly in, (32) 454; (35) 551.
 - chalcid fly, remedies, (32) 549.
 - clover seed chalcid parasites in, (40) 862.
 - determination of origin, (37) 541.
 - factors affecting setting, (26) 633.
- seed, germination—
 - and purity tests, (29) 741.
 - energy of, (29) 538.
 - tests, (26) 44; (27) 338; (31) 43; (34) 143.
- seed—
 - high v. low grade, (26) 838.
 - impermeable, viability, (35) 740.
 - importations in Argentina, (37) 823.
 - imported, tests, (26) 634.
 - insects affecting, (27) 338.
 - inspection, (31) 438.

Alfalfa—Continued.

seed—continued.

- inspection in Maryland, (36) 442.
- northern-grown, (39) 337.
- oil, chemistry of, (34) 710.
- persistence and vitality of bacteria on, (26) 820.
- producton (26) 632; (27) 338, 836; (30) 35; (33) 430; (38) 131, 735.
- production in Europe, (26) 436.
- production, relation to moisture, (34) 824.
- purity tests, (27) 733.
- standards in Canada, (26) 839.
- studies, (40) 39.
- tests, (27) 142.
- varieties, (39) 232.
- vitality, (27) 740.
- yields, (29) 330.

seedling—

- depths, (40) 227.
- experiments, (29) 32, 224, 330, 531; (31) 735; (32) 430, 531; (33) 830; (34) 229; (35) 336; (37) 29, 535, 639; (39) 436, 437, 737, 834; (40) 332, 430, 433.
- on ranges, (30) 35.

seeds—

- enzymes in, (28) 710.
- hard, germination tests, (30) 738.
- selection experiments, (36) 735; (39) 126.
- self-sterility, (38) 426.
- Sempalatinsk, (39) 338.
- serpentine leaf miner affecting, (29) 857.
- shredded, analyses, (33) 71.
- sickness, notes, (36) 541.

silage—

- acidity, (39) 310, 878.
- chemical studies, (37) 709.
- composition, (32) 769.
- feeding value, (39) 73.
- for steers, (32) 769.
- from, (38) 665.
- nutritive value, (26) 360.
- preservation and use, (37) 671.
- studies, (40) 10, 503.

soil moisture removal by, (40) 430.

- sowing with and without a nurse crop, (26) 434.
- spacing tests, (39) 229.
- Spanish, culture and identification, (36) 36.
- steaming and ensiling (31) 467.
- stem rot, studies, (34) 541; (38) 850.
- stems and leaves, analyses, (26) 714.
- strains, tests, (39) 738.
- straw, ground, analyses, (39) 370.
- studies, (26) 632.
- successive cuttings, feeding value, (39) 166.
- successive cuttings, protein content, (39) 737.
- sulphur in, (31) 817.
- tea, analyses, (34) 469.
- thrips affecting, (29) 252.
- time-of-harvesting test, (33) 429.
- toxic effect on pigs, (38) 589.
- transpiration in, (34) 522; (36) 226.
- transpiration rate, (37) 429.
- transplanting, (29) 331; (35) 830.
- treatise, (28) 737; (32) 828.
- treatment with sulphuric acid before planting, (35) 526.

tree, culture experiments, (30) 632.

Turkestan—

- as hog pasture, (40) 471.
- commercial seed, (32) 38.
- culture experiments, (30) 526.
- culture in Hungary, (30) 36; (32) 133.
- v. Hungarian, (31) 629.

utilizing waste land for, (40) 137.

v. clover for milch cows, (39) 578.

v. clover in rotation, (29) 634.

v. red clover, (40) 328.

- varieties, (26) 233, 534, 631, 632, 733; (27) 32, 235, 335, 431, 831, 835; (28) 533, 828; (29) 137, 139, 222, 426, 830; (30) 33, 434, 526; (31) 133, 829, 831; (32) 36, 431, 528, 529, 530, 730; (33) 31, 33, 632, 728; (34) 227, 630; (35) 31, 228, 229, 527, 528, 530, 826, 830; (36) 36, 133, 435, 436, 828; (37) 229, 230, 231, 331, 435, 531; (38) 32, 132, 231, 433, 632, 634, 827, 828, 829.

varieties—

- for Alaska, (39) 125, 126.
- for Iowa, (39) 232; (40) 328.
- new, (28) 533; (39) 337.

Alfalfa—Continued.

- variety tests, (39) 128, 130, 131, 227, 228, 433, 436, 437, 530, 736, 738; (40) 228, 430, 433, 733, 735, 823.
- vegetative regeneration, (33) 528.
- vitality of, (26) 734.
- vitamin content, (40) 564.
- water requirements, (26) 632; (29) 826; (32) 127, 226; (33) 229; (38) 434.

webworm—

- control, (39) 865.
- notes, (28) 653.
- studies, (35) 158.

weevil—

- control in Arizona, (35) 656; (37) 846.
- control in Western United States, (38) 163.
- notes, (32) 156; (35) 554; (37) 255; (40) 161, 853.

oviposition in relation to temperature, (33) 257.

popular account, (39) 264.

remedies, (29) 259.

studies, (27) 560; (37) 262.

white flowered selection, (39) 337.

white spot, notes, (35) 846; (36) 47; (40) 50.

wilt disease, description, (36) 47.

winterkilling, (27) 235; (28) 734; (35) 530; (36) 828.

yellow—

- composition, (33) 832.
- leaf blotch disease, (36) 248.
- selection and hybridization, (33) 831.
- studies, (36) 334.

yield as affected by—

- number of cuttings, (40) 522.
- origin of seed, (28) 432.
- slope of field, (30) 230.
- yield in relation to precipitation, (37) 717.
- yields, (27) 736; (29) 631; (30) 134; (39) 337; (40) 31, 735.

yields—

- basis for, (31) 329.
- determination, (37) 439.
- error in determination, (32) 38.

Alfalfone, occurrence in alfalfa, (26) 802.

Alfilaria—

- as green manure, (39) 31.
- seed, collection and sowing, (29) 533.
- seed, impermeable, viability, (35) 740.
- seeding on ranges, (30) 35.

Algae—

- analyses, (26) 324.
- and bacteria, symbiosis, (28) 31.
- brown, color change in, (31) 626.
- carbon nutrition of, (31) 426.
- chondriosomes in, (35) 635.
- conduction of lithium, (39) 122.
- control in canals, (40) 188.
- culture in agar, (28) 727.
- destruction in drinking water, (36) 183.
- destruction in reservoirs, (38) 731.
- development and nutritional physiology, (40) 130.
- grass-green, nitrogen fixation by, (30) 727; (31) 827.
- heat development of, (31) 323.
- in soils, (28) 31.
- lower, assimilation of nitrogen and phosphorus by, (28) 35.

marine—

- bibliography, (27) 22.
- chemical analyses, (40) 725.
- distribution, (34) 32.
- enzym action in, (35) 25.
- gas exchange in, (35) 431.
- imbibitional swelling, (39) 731.
- osmotic pressure in, (39) 223.
- oxidases and catalase in, (31) 626.
- sources of nitrogen for, (31) 828.
- used in Japanese agar-agar, chemical studies, (40) 110.

new races and species, (40) 130.

red, diastase in, (29) 220; (32) 503.

relation to gases in water, (28) 821.

wood-penetrating, notes, (26) 853.

Algaroba—

- meal, use, (32) 730.
- notes, (26) 362.
- tree, culture experiments, (36) 340.

Algie acids, studies, (40) 804.

- Algin, composition, (33) 108.
 Algin, description, (29) 566.
 Algocyan, notes, (36) 202.
 Alimentary intoxications—
 notes, (34) 575.
 of horses, (26) 887.
 Aliphatic acids, saturated, cleavage, (31) 465.
 Alisma plantago seeds, delayed germination in,
 (31) 824.
 Alizarin oil, insecticidal value, (34) 359.
 Alkali—
 accumulation, relation to irrigation, (33) 419.
 albumin, production of anaphylaxis by, (26) 1.
 and salt industry, treatise, (36) 428.
 brush, poison, analyses, (39) 184.
 bush ash, analyses, (36) 429.
 carbonated and caustic, titration of mixture,
 (39) 714.
 carbonates, determination, (26) 406.
 content of soils as related to crop growth, (40)
 719.
 crusts of United States, (27) 22.
 determination in—
 arsenical dip fluid, (26) 411.
 chlorinated solutions, (39) 506.
 hypochlorite solutions, (40) 309.
 silicates, (30) 11.
 soils, (32) 504; (33) 610; (34) 609.
 distribution by irrigation, (40) 719.
 effect on—
 cement, (27) 89; (28) 86; (32) 787; (37) 788.
 concrete, (32) 381.
 concrete drain tile, (34) 87.
 creatin elimination, (36) 161.
 denaturation of proteins, (29) 501.
 growth of rice, (34) 31.
 milk, (28) 18.
 nitric-nitrogen accumulation in soils, (40)
 722.
 nitrogen-assimilating bacteria, (39) 722.
 permeability, (34) 429.
 peroxidase, (29) 202.
 proteins, (38) 803.
 quality of sugar beets, (28) 43.
 soil bacteria, (37) 213.
 specificity of precipitins, (26) 482.
 wheat yield, (39) 736.
 formation by enzymes, (30) 111.
 metal salts, effect on saccharification of starch,
 (26) 309.
 origin, (37) 809.
 production in soils by denitrification, (36) 321.
 protection of concrete structures from, (29) 386.
 relation to chlorosis, (28) 623.
 relation to light precipitation, (27) 816.
 salts—
 as affected by calcium carbonate, (39) 721.
 combination of chlorin ions in, (33) 623.
 determination in soils, (28) 318.
 salts, effect on—
 ammonification, (39) 721.
 burning quality of tobacco, (39) 34.
 concrete, (29) 686.
 crop growth, (36) 118.
 germination and growth of crops, (34) 125.
 growth of rice, (30) 630, 728, 833.
 nitrification, (38) 322.
 plants, (28) 527.
 soil bacteria, (27) 124; (28) 519, 719.
 salts—
 in irrigation waters, (39) 792.
 soil, antagonistic agents, (39) 619.
 soils, (33) 421.
 soils of India, (29) 514.
 studies, (29) 137.
 toxicity, soil factors affecting, (40) 315.
 soils—
 analyses, (34) 512.
 analyses and treatment, (30) 622.
 as affected by irrigation, (34) 16.
 bacteriological studies, (26) 646.
 black, of San Luis Valley, (38) 324.
 drainage, (34) 283; (36) 186, 584; (38) 591.
 durability of concrete and drain tile in, (39)
 86; (40) 386.
 soils, effect on—
 concrete drainage tile, (34) 584.
 cotton, (27) 640.
 dry farm crops, (37) 437.
 wilting coefficients of plants, (28) 823.
- Alkali—Continued.
 soils—
 gypsum for, (40) 51.
 improvement, (26) 223, 224; (28) 32, 814; (31)
 317; (33) 416.
 irrigation, (33) 419.
 methods of analysis, (32) 296.
 of Egypt, (30) 21.
 India, (28) 736.
 Iowa, studies, (39) 720, 813.
 Nevada, analyses, (31) 215.
 Niger River basin, analyses, (26) 318.
 Ohio, (35) 510.
 San Luis Valley, (38) 324, 386.
 United Provinces in India, (33) 419.
 origin, (37) 809.
 plants tolerant to, (40) 221.
 reclamation, (26) 590; (31) 889; (32) 36; (33)
 88, 324, 392, 419, 421, 430, 814, 815; (35) 516;
 (37) 281; (38) 118, 815.
 reclamation with Bermuda grass, (29) 330.
 studies, (27) 321; (28) 319, 515, 516; (36) 118.
 treatment, (39) 215; (40) 32.
 tolerance of—
 eucalypts for, (26) 642.
 wheat seedlings, studies, (27) 500; (29) 322.
 water—
 effect on dairy cows, (30) 775.
 effect on dairy products, (27) 282.
 notes, (28) 27.
 still for, (28) 796.
 Alkalimetry, indicator for, (36) 13.
 Alkaline—
 carbonates, determination, (40) 112.
 earth metals, separation, (34) 409.
 earth salts, effect on plants, (28) 527.
 earths, effect on *Lupinus albus*, (31) 325.
 solutions—
 dilute, determining alkalinity, (40) 610.
 effect on invert sugar, (27) 812.
 toxicity toward plants, (35) 28.
 Alkalis—
 destructive action on vitamins, (36) 465.
 determination in rocks, (31) 502.
 effect on *Lupinus albus*, (31) 325.
 effect on malt diastase, (31) 806.
 in Colorado, studies, (39) 323.
 Alkaloid—
 animal, isolation from milk, (26) 212.
 formation in tobacco, (35) 333.
 Alkaloidal reactions, notes, (27) 208.
 Alkaloids—
 biological formation and function, (32) 327.
 cinchona, disinfecting action, (40) 478.
 detection, (29) 408.
 detection in beverages, (31) 114.
 detection in water, (34) 410.
 distribution in belladonna plant, (31) 201.
 effect on—
 germination of seeds, (33) 825.
 healthy cattle, (29) 476.
 formation in tobacco, (27) 133.
 identification by optical methods, (39) 415, 506.
 in beverages, (31) 358.
 origin in plants, (27) 228.
 plant, synthesis of, (31) 409.
 plant, treatise, (29) 503.
 Senecio, effect on cattle, (27) 79.
 variation in plant leaves, (30) 44.
 Allantoin—
 assimilation by plants, (26) 32.
 determination in urine, (33) 116.
 distribution in plants, (30) 129.
 heat of combustion, (26) 160.
 occurrence in sugar beets, (28) 810.
 output as affected by water ingestion, (27) 168.
 use against beri-beri, (34) 367.
 Allergy—
 notes, (32) 78.
 parasitic, notes, (38) 689.
 Alligator pears, *see* Avocados.
 Alligators as human food, (39) 471.
 Allium—
 cepa, protein formation in bulbs of, (31) 224.
 cepa, stomatal movement in, (26) 627.
 polvanthum, occurrence of arsenic in, (27) 269.
 sativum, selection experiments, (30) 738; (32)
 834.
 vineale, eradication, (29) 433; (31) 739.

- Allobraccon* (*Diachasma*) *pilosipes* n.g. and n.sp., notes, (34) 455.
- Allocota* *thyridopterigis*, notes, (27) 558.
- Allodorus tomosiae* n.sp. description, (33) 749.
- Allodus*, North American species, (36) 542.
- Allognota agromyzina*, studies, (37) 764.
- Allograpta*—
 frocta, parasitic on rose aphid, (31) 250.
 obliqua, life history, (28) 254.
 obliqua, notes, (36) 460.
- Allolobophora longa*, carbon dioxid exhalation of, (26) 619.
- Allorhina*—
 mutabilis—
 notes, (28) 451; (29) 453; (33) 57.
 remedies, (35) 551.
 nitida, see June beetle, green.
- Allorhogas gallicola* n.g. and n.sp., description, (27) 60.
- Allotropa*—
 meridionalis n.sp. description, (31) 355.
 thompsoni n.sp., description, (31) 62.
- Alloxan*—
 assimilation by plants, (26) 32.
 nitrification as affected by lime, (38) 119.
- Alloxuric bases*—
 in grape leaves, (27) 731.
 in stachys tubers and citrus leaves, (26) 107.
- Allspice*—
 effect on micro-organisms, (35) 557.
 examination, (32) 161.
 germicide effect, (36) 864.
 preservative value, (38) 469.
- Alluvial lands*, underdrainage of, (26) 685.
- Allyl alcohol*, insecticidal and larvicidal value, (34) 359.
- Allylamins*, assimilation by plants, (26) 32.
- Almond*—
 and peach graft hybrid, description, (29) 838.
 as rootstock, tests, (40) 445.
 branches, development on peach trees, (26) 46.
 flowers, polymorphism in, (28) 540.
 Gloeosporium disease, notes, (36) 453.
 ground, description, (29) 59.
 gummosis, studies, (35) 849.
 hulls as feeding stuff, (34) 262.
 leaf and twig curl, (36) 647.
 nitrogen, biological value, (40) 660.
 oil, analyses, (26) 504.
 oil, digestibility, (33) 868.
- Almonds*—
 bitter, hydrocyanic acid content, (28) 477.
 crown gall affecting, (28) 447.
 crown gall resistance in, (35) 645; (36) 352.
 culture in southern Texas, (32) 539.
 destruction by birds, (29) 51.
 Exoascus deformans affecting, (30) 353.
 fertilizer experiments, (30) 238.
 floral biology, (35) 437.
 histological characteristics, (27) 112.
 hydrocyanic acid in, (26) 228.
 Java, as a food for infants, (29) 566.
 microscopic identification, (28) 565.
 of Southwestern States, description, (30) 41.
 permeability of seed coat, (38) 25.
 pollination, (36) 139.
 production, (39) 846.
 protection against frost, (27) 316, 345.
 spraying experiments, (28) 652.
 stocks for, (40) 445.
 varieties, (37) 143.
 varieties grown at Andria, Italy, (31) 238.
- Alnarp Agricultural and Dairy Institute*, report, (27) 694; (29) 172; (34) 692.
- Alnus oregona*, notes, (27) 846.
- Alnus*, root tubercles, (27) 25.
- Alocasia* storage rots, (35) 750.
- Alocasias*, culture and analyses, (32) 37.
- Aloe*—
 American, analyses, (32) 166.
 fiber, tests, (31) 526.
 transvaalensis, gall on, (31) 752.
- Aloin*, insecticidal value, (34) 359.
- Alopecurus*—
 pratensis, germination experiments, (31) 227.
 pratensis, yield and composition, (28) 834.
 pubescens, culture in New Zealand, (29) 428.
- Alpacas*, value as domestic animals, (27) 470.
- Alpha Zeta Fraternity*, annual convale, (27) 106.
- Alphitobius piceus*, studies, (37) 356.
- Alphitophagus bifasciatus*, notes, (37) 567.
- Alpine Laboratory on Pikes Peak*, (28) 496.
- Alsicarpus* sp., notes, (30) 230.
- Alsophila pometaria*, see Cankerworm, fall.
- Altai*, hybridization experiments, (29) 171.
- Alternanthera* worm, notes, (28) 854.
- Alternaria*—
 ammonifying power, (32) 29.
 brassicaceae, notes, (27) 848.
 brassicaceae on collards, (37) 48.
 camelliae, notes, (37) 550.
 citri—
 cerasi, n.var., description, (38) 251.
 notes, (27) 350; (29) 248; (35) 749.
 on the navel orange, (40) 839.
 relation to citrus gummosis, (31) 449.
 crassa n.comb., description, (39) 248.
 crassa, notes, (38) 451.
 dianthi, notes, (37) 155.
 mali, n.sp., description, (31) 150.
 mali, notes, (33) 544.
 panax, notes, (27) 446; (29) 549; (30) 649; (34) 245.
 panax, treatment, (27) 747.
 solani—
 as affected by cold, (34) 538.
 description and treatment, (29) 847; (30) 50.
 dissemination by insects, (40) 645.
 notes, (26) 649; (29) 646; (30) 48; (35) 547.
 on tomatoes, (39) 854.
 relation to potato stem lesions, (39) 649.
 spore production, (38) 249.
 studies, (38) 235, 451.
 treatment, (37) 50.
 varietal resistance to, (31) 643.
 sonchi n.sp., description, (37) 353.
 sp. on apple, (32) 751; (38) 453.
 sp. on cotton, (40) 346.
 sp. on sweet cherries, (36) 452.
 sp. on sweet potato, (39) 854; (40) 347.
 sp., studies, (30) 846.
 sp., temperature relations, (36) 649.
 spp., relation to—
 apple rot, (33) 348.
 citrus gummosis, (29) 247.
 Jonathan spot rot, (31) 748.
 studies, (39) 30, 248.
 tenuis—
 notes, (32) 843.
 notes and treatment, (27) 354.
 violae, studies, (29) 753.
- Althaea*—
 inheritance of doubleness, (39) 123.
 rosea, coloring matter of, (34) 710.
 rosea, symbiosis with fungi, (27) 751.
- Althaein*, studies, (34) 710.
- Althaea officinalis*, mucin-like substances of, (31) 409.
- Altica*—see also *Haltica*.
- ampelophaga*, biology and control, (33) 555.
- bimarginata*, biology, (39) 64.
- n.spp.*, descriptions, (40) 357.
- spp.*, biology, (40) 357.
- Alto-cumulus* with *virgulus*, (35) 115.
- Alucita sacchari*, notes, (38) 465.
- Alum*—
 detection in bread, (27) 504; (30) 809.
 detection in flour, (27) 504; (38) 412.
 effect on action of chlorin, (34) 885.
 in foods, (31) 556.
 solution, chlorinated, antiseptic value, (40) 779.
 toxicity, (28) 661; (35) 473.
 use in baking powder, (26) 564.
- Alumina*—
 and carbon, fixation of nitrogen by, (29) 417.
 determination in mineral phosphates, (34) 112.
 distribution in loam soils, (31) 618.
 effect on assimilation of phosphoric acid, (27) 722.
 extraction from feldspar, (27) 724; (28) 222; (29) 518.
 relation to nitrogen fixation, (29) 24.
- Aluminum*—
 absorption—
 and distribution from foods, (27) 268.
 from food products, (35) 860.
 alloys for—
 canteens and cooking utensils, (34) 257.
 household utensils, (32) 457.
 and iron, separation, (33) 313.
 as affected by nitric acid, (35) 802.

Aluminum—Continued.

- as factor in soil acidity, (37) 799.
- chlorid, action on cymene, (38) 309.
- compounds in vegetable foods, (32) 455.
- concentration in subsoil, (31) 720.
- cooking vessels, tests, (29) 362, 363.
- dairy utensils, tests, (35) 189; (36) 571.
- detection and distribution in plants, (31) 129; (32) 609.
- determination, (36) 203.
- determination in—
 - biological materials, (35) 302.
 - foods, (29) 809.
 - plants, (29) 797.
- digestion by chickens, (30) 873.
- effect on—
 - Aspergillus niger*, (30) 824.
 - development of corn, (33) 522.
 - health, (31) 556.
 - permeability, (34) 34.
 - plant growth, (30) 824.
- in acid soils, (39) 114.
- in plants, (38) 409.
- milk cans, use, (31) 375.
- nitrid—
 - ammonia from, (31) 822; (32) 125.
 - availability of nitrogen in, (35) 427.
 - fixation of atmospheric nitrogen by, (27) 325, 624.
 - formation, (29) 822.
 - manufacture, (28) 222.
- nitrid, manufacture—
 - and use, (29) 319; (35) 428.
 - from the air, (27) 623.
 - progress in, (29) 730.
 - Serpuk process, (29) 127.
- nitrogen, fertilizing value, (31) 821.
- oxid, effect on germination of seeds, (29) 528.
- phosphate as affected by calcium carbonate, (26) 527.
- phosphate, fertilizing value, (26) 428, 622; (31) 823; (36) 626.
- relation to soil acidity, (40) 125.
- relation to soil productivity, (30) 518.
- salts, effect on—
 - ferments, (26) 309.
 - plants, (34) 525.
 - solubility of phosphates, (37) 323.
 - sugar beets, (31) 233.
- salts—
 - fertilizing value, (27) 327.
 - toxic effect on rice, (35) 817.
 - toxicity toward clover, (33) 328.
- separation from iron, (38) 10.
- silicate rocks of Madagascar and West Africa, (32) 511.
- silicates—
 - extraction of potash from, (26) 426.
 - fertilizing value, (31) 31.
- sulphate—
 - effect on sugar beets, (26) 225; (35) 217.
 - extraction from feldspar, (28) 223.
 - fertilizing value, (27) 500, 628; (28) 34; (30) 824; (33) 841.
 - in sulphur-phosphate compost, (39) 624, 822.
 - injury to barley, (40) 220.
 - purification of water by, (35) 388.
 - use in detection of arsenic, (28) 804.
- Alundum crucible for determination of phosphoric acid, (31) 17.
- Amanite—**
 - as source of potash, (27) 500, 628; (31) 321; (33) 819; (34) 328, 821; (36) 17; (39) 727; (40) 128.
 - deposits in Spain, (26) 728.
 - deposits in United States, (26) 526; (31) 322.
 - fertilizing value, (29) 25.
- Alveolar air—**
 - composition during respiratory cycle, (33) 70.
 - sampling, (34) 369.
- Alypia octomaculata*, see Eight-spotted forester.
- Alysicarpus vaginalis*, notes, (26) 362.
- Amabebe, transmission by ticks, (26) 882.
- Amandin, lysin content, (31) 559.
- Amanita—**
 - hemolysin and antihemolysin, union, (30) 879.
 - phalloides, hemolytic power, (30) 878.
 - toxicity, (30) 879.
- Amaranthus—**
 - albus, analyses, (33) 466.

Amaranthus—Continued.

- retroflexus—
 - analyses, (34) 39.
 - localization of betain in, (27) 203.
 - seed, analyses, (39) 502.
 - variation in, (32) 726.
- sp., use as cereal crop, (39) 532.
- spinous, notes, (32) 436.
- transpiration in, (34) 522.
- Amatissa consorta*, notes, (31) 849.
- Amatungulas*, culture in Guam, (30) 41.
- Ambari, production in Africa, (40) 238.
- Amblyomma—**
 - altiplanum n.sp., description, (38) 468.
 - dissimile, studies, (40) 359.
 - fiebri n.sp., description, (26) 460.
 - n.sp., description, (27) 361.
 - spp., notes, (27) 865.
 - spp., transmission of splenic fever by, (28) 753.
 - variegatum nocens n.var., description, (26) 460.
 - variegatum, notes, (34) 851.
- Amblyspatha ormerodi* n.sp., notes, (30) 159.
- Amblyteles putus*, notes, (36) 54.
- Amboceptor action in vitro, (40) 380.
- Ambrine, use in severe burns, (38) 885.
- Ambrosia beetle—**
 - injurious to sal, (36) 360.
 - notes, (32) 552.
 - pitted, notes, (33) 252.
- Ambrosia—**
 - spp., leaf variation in, (27) 741.
 - trifida, analyses, (34) 39.
- Ameba—**
 - freezing experiments, (27) 523.
 - prevalence in soils, (32) 619.
 - studies, (27) 477.
- Amebas—**
 - parasitic in man, treatise, (26) 375.
 - pure cultures of, (26) 375.
- Amebic infections, studies, (26) 677.
- Amelanchier, inoculation experiments with brown rot fungus, (33) 247.
- Amelotocoun n.sp., notes, (28) 253.
- American—**
 - Association—
 - for Advancement of Agricultural Teaching, (26) 1, 198; (28) 96; (30) 98; (31) 799 (32) 8; (33) 797; (36) 198; (37) 601, 798; (39) 701; (40) 398.
 - for Advancement of Science, (30) 198, 700; (31) 604, 700; (32) 101; (33) 797; (36) 1; (39) 601.
 - for Agricultural Legislation, (39) 198, 702; (40) 298, 789.
 - of Agricultural College Editors, (31) 101, 199; (33) 496; (34) 796; (39) 199.
 - of Economic Entomologists, (32) 398.
 - of Farmers' Institute Workers, (26) 199; (27) 798; (28) 94; (29) 792; (32) 8, 97; (33) 792, 793; (36) 194; (37) 601, 796; (39) 701; (40) 595.
 - of Instructors and Investigators in Poultry Husbandry, (27) 400.
 - of Medical Milk Commissions, (36) 572.
 - Bison Society, report, (30) 469; (33) 470.
 - Breeders' Association, report, (28) 570.
 - Farm Economics Association, (39) 702; (40) 299.
 - Farm Management Association, (26) 1, 294; (28) 198; (32) 8, 292, 389; (34) 792; (36) 297; (37) 389; (39) 192, 702; (40) 298.
 - Genetic Association, (30) 399.
 - Good Roads Congress, (31) 385.
 - grass, analyses, (27) 68.
 - Leather Chemists' Association, (32) 314.
 - Meat Packers' Association, report, (29) 770.
 - Meteor Society, (32) 810.
 - Milking Shorthorn Breeders' Association, (34) 269.
 - National Live Stock Association, (31) 767; (37) 769.
 - Phytopathological Society, war emergency board, (38) 100.
 - Poultry Association (30) 872.
 - Road Builders' Association, (31) 385; (35) 84; (36) 90.
 - Road Congress, proceedings, (29) 291.
 - Society for—
 - Horticultural Science, (37) 239.
 - Testing Materials, (28) 384.

American—Continued.

Society of—

Agricultural Engineers, (26) 398; (28) 199; (32) 400; (34) 498; (36) 397; (40) 500.

Agronomy, (26) 1, 196, 434; (27) 106; (28) 536, 537; (32) 8, 199; (36) 197; (37) 601, 799; (39) 701; (40) 299.

Animal Nutrition, (26) 1, 71, 197; (27) 469; (28) 98.

Animal Production, (30) 99; (32) 8, 98, 566; (34) 400, 570.

Milling and Baking Technology, (32) 8, 300.

Veterinary Medical Association, (27) 576; (29) 197, 301, 498.

Wood Preservers' Association, (36) 45

Ameromyzobia aphelinoides n.g. and n.sp., description, (36) 556.

Amerosporium—

on cowpea, (39) 52.

vanillae, description, (27) 450.

Amersibia prionoxyti n.sp., description, (34) 456.

Ames filter, description, (27) 805.

Ametastegia glabrata—

as an apple pest, (36) 461.

notes, (34) 557; (38) 156, 358.

Ami beans, effect on nitrogen content of soils, (31) 733.

Amianthum muscaetoxicum, chemical studies, (33) 177.

Amicroplus crambivorus n.sp., description, (26) 352.

Amidosulphonic acid, assimilation by plants, (26) 32.

Amids—

acid, as sources of ammonia in soils, (29) 723.

acid, behavior in soils, (28) 813.

ninhydrin reaction with, (35) 615.

nutritive value, (26) 71.

synthesis by plants, (29) 133.

Amino acid—

content of nutrient media, (40) 201.

copper compounds, pharmacology and toxicology, (39) 685.

new, isolation, (40) 611.

nitrogen of soil as affected by heat, (39) 617.

Amino acids—

absorption by the body, (29) 567; (38) 366.

aliphatic, determination, (31) 610.

ammonification in soils, (32) 718.

and carbohydrates, reaction between, (36) 412.

and vitamins in the diet, (32) 857.

as affected by bromin, (34) 803.

as sources of ammonia in soils, (29) 723.

behavior in soils, (27) 500; (29) 124.

deficiency in diet, (37) 265.

detection in serum of nephritics and others, (32) 80.

determination, (26) 107; (30) 764; (33) 207; (37) 506.

effect on—

amylolytic enzymes, (37) 205.

cobra venom hemolysis, (36) 276.

dogs, (28) 568.

metabolism, (28) 867.

Penicillium glaucum, (27) 526.

residual nitrogen in blood, (29) 768.

uric acid metabolism, (40) 175.

extraction, (40) 611.

late in digestive tract, (30) 464.

formol titration method, (39) 503.

free, utilization, (35) 165.

hydrolytic action on esters, (27) 802; (30) 806; (31) 710.

in barley, malt, and beer, determination, (33) 613.

blood, determination, (37) 207.

diet, effect on growth, (37) 865.

feeding stuffs, (33) 665, 805; (34) 412; (37) 10.

grape leaves, (27) 731.

growth, (32) 662.

metabolism of fowls, (33) 172.

muscular tissues, (32) 359; (33) 755.

plants, determination, (29) 411.

proteins as an index to nutritive value, (33) 262.

proteins, determination, (26) 22; (33) 867.

proteins, percentage, (26) 665.

proteolysis, bloods, and urine, determination, (31) 211.

soils, (34) 515.

Amino acids—Continued.

in soils, determination, (34) 811.

stomach and intestines on vegetable diet (36) 664.

tissue as affected by protein feeding, (40) 562.

tissues, determination, (31) 808.

urine, determination, (34) 808.

wool, (34) 202.

isolated, feeding experiments with, (35) 862.

metabolism, (39) 873.

minimum for maintenance and growth, (35) 268.

monosubstituted, determination, (35) 315.

ninhydrin reaction with, (35) 614, 615.

nutritive value, (26) 71.

place of retention in the body, (27) 169.

precipitating agents for, (27) 713.

resorption in the intestine, (31) 361.

role in nutrition and growth, (31) 558; (35) 269 368.

synthesis in the tissues, (28) 801.

Amino—

aldehyde, significance in intermediary metabolism, (40) 71.

butyric acid in prolin fraction of casein, (30) 463.

compounds, effect on baking qualities of flour, (30) 556.

groups, aliphatic, determination, (29) 108, 408.

nitrogen, see Nitrogen.

Aminopropionic acid, assimilation by plants, (26) 32.

Amins—

acid, determination and transformation in soils, (31) 515.

from organ extracts and body fluids, (34) 777 778.

in canned sardines, (40) 411.

Amitus minervae n.sp., description, (26) 149.

Ammonia—

absorption—

and distribution in soil, (36) 425.

and nitrification in presence of zeolites (39) 520.

by soils (36) 219, 816.

from the atmosphere, (32) 121.

accumulation—

by soil fungi, (35) 513.

in partially sterilized soils, (30) 226.

in soil, relation to carbon dioxide production, (39) 616.

action on superphosphate, (35) 519.

adsorption by soils, (34) 719.

and nitric nitrogen, determination in soil solution, (39) 610.

as by-product of sugar industry, (34) 318.

as fumigant for mill insects, (34) 253.

as source of protein for animals, (26) 72.

assimilation by—

plants, (36) 631, 632.

seedlings, (27) 633.

soil microorganisms, (26) 617.

cleavage in peat, (28) 508.

compounds—

detection in ethyl alcohol, (29) 312.

determination in meat and fish products, (29) 798.

concentration in tissues, (40) 562.

conversion into nitric acid, (32) 423, 424.

conversion into nitric acid and ammonium nitrate, (31) 822.

crude—

fertilizing value, (26) 323.

source, disposition, and use, (28) 626.

studies, (29) 127.

determination, (26) 709; (27) 497; (29) 609; (30) 764; (31) 108; (33) 12, 312, 313; (34) 111, 503; (36) 413; (39) 311.

determination—

apparatus for, (40) 709.

in carbonated waters, (27) 610.

fertilizers, (31) 313; (37) 412.

foods, (29) 809.

milk, (32) 413.

proteins, (26) 22.

soils, (28) 111; (29) 797; (30) 215; (33) 411; (34) 314.

urine, (26) 870; (34) 508; (36) 316; (37) 311.

water, (26) 709.

wine, (37) 414, 415.

Ammonia—Continued.

- distillation—
 - aeration method, (36) 504.
 - from water, (36) 15.
 - scrubber for, (40) 806.
- effect on—
 - oviposition of house fly, (38) 563.
 - peroxidase, (29) 202.
- electrical synthesis, (32) 33.
- electrotechnical production, (29) 24.
- elimination in urine during rest, (35) 863.
- evaporation—
 - and transformation in cells, (26) 525.
 - from soils, (30) 425.
- excretion—
 - as affected by water drinking, (34) 763.
 - during fasting, (30) 764.
 - from soil, (40) 203.
- fixation—
 - by cell albumin, (34) 30.
 - in manure, (32) 819.
 - in soils, (37) 318.
- formation—
 - and use in killed plants, (28) 327.
 - by mold fungi, (28) 803.
 - from cyanamid, (38) 516.
 - in higher plants, (28) 328.
 - in soil as affected by salts, (39) 218.
 - in soils, (27) 721.
 - organic nitrogen in, (32) 818.
 - from aluminum nitrid, (32) 125.
- gas as a fumigant, (31) 256.
- gas, effect on animals, (26) 373.
- in canned sardines, (40) 411.
- dew, (37) 116.
- diseased plants, (37) 549.
- peats and humus soils, (36) 612.
- rain and snow of South Polar region, (26) 515.
- rainwater, (40) 809.
- soil as affected by heat, (39) 617.
- stomach and intestines on vegetable diet, (36) 664.
- loss from manured soils, (31) 421.
- loss from soils, (27) 21.
- manufacture, (28) 424, 723; (30) 427, 721.
- manufacture—
 - from the air, (29) 822.
 - methods, (27) 520.
 - Serpek method, (31) 518.
- metabolism, relation to acid and base-forming elements in foods, (26) 158.
- methods of analysis, (27) 609.
- nesslerization in urine, (39) 111.
- nitric acid from, (29) 517.
- origin and significance in portal blood, (26) 870.
- oxidation, (38) 311, 710; (40) 815.
- oxidation in plants, (34) 627.
- physical and chemical data, (40) 607.
- production in United States, (28) 522.
- protein, determination in water, (33) 501.
- retention by soils, (36) 299.
- salt, effect on nitrogen retention in goats, (32) 261.
- separation from pyridin, (26) 709.
- solutions, effect on saccharin substances, (26) 307.
- sources in soils, (29) 723.
- "superphosphate of," (40) 127.
- synthesis—
 - at high temperatures, (39) 817.
 - Haber process, (38) 423.
- synthetic—
 - manufacture and use, (35) 428.
 - manufacture, progress in, (29) 730.
 - preparation, (28) 222; (29) 127.
- tablet, reagents for, (26) 608.
- titrations, indicators for, (38) 311.
- utilization—
 - by corn plantlets, (27) 634.
 - by pea seedlings, (27) 730.
 - in protein metabolism, (29) 365.

Ammoniacal—

- nitrogen, fertilizing value, (39) 726.
- salts, adding to diet, (34) 762.
- salts, effect on saccharification of starch, (26) 309.

Ammoniates, fertilizing value, (28) 724.

Ammonification—

- as affected by—
 - alkali salts, (26) 322; (39) 721.
 - alkali salts and calcium carbonate, (39) 721
 - carbon dioxide gas, (39) 618.
 - digestion of soils, (28) 121.
 - humus-forming materials, (35) 216.
 - irrigation, (31) 24.
 - lime-magnesia ratio, (32) 720.
 - liming, (26) 428.
 - manganese salts, (37) 126.
 - metallic salts, (31) 120.
 - soil temperatures, (29) 317.
 - sulphur, (40) 128.
 - various salts, (39) 323.
 - as criterion for measuring soil fertility, (35) 25.
 - in Hawaiian soils, (32) 719.
 - in Nebraska soils, (29) 734.
 - in soils, (26) 721; (31) 317, 420, 818; (33) 808; (35) 729; (36) 513, 724.
 - in soils—
 - and solutions, (30) 218; (31) 420.
 - as affected by arsenic, (30) 423, 424.
 - as affected by sulphur, (31) 125.
 - methods of studying, (36) 214.
 - nature, (36) 513; (38) 621.
 - studies, (27) 517; (29) 21; (34) 127, 619.
 - inhibition by alkali salts, (28) 719.
 - of green manures, (33) 514.
 - relation to availability of nitrogenous materials, (26) 124.
 - relation to osmotic pressure, (39) 323.
 - relation to temperature, (31) 127.
 - seasonal variation, (32) 514.
 - studies, (28) 718, 719; (39) 324.
 - studies with soil fungi, (32) 817.
- Ammonium—
- acetate, effect on milk production and quality, (26) 476.
 - bicarbonate, fertilizing value, (35) 325, 518.
 - carbonate—
 - effect on determination of humus, (31) 111.
 - effect on germination and growth of crops (34) 125.
 - fertilizing value, (35) 126, 218, 519.
 - utilization by soil fungi, (39) 623.
 - chlorid—
 - absorption by plants, (35) 435.
 - as source of nitrogen for the body, (30) 65.
 - chlorid, effect on—
 - ferric and aluminum hydroxids during ignition, (34) 205.
 - germination of seeds, (29) 328.
 - plants and microorganisms, (27) 229.
 - solubility of sulphates, (28) 818.
 - chlorid—
 - fertilizing value, (35) 126, 218, 325, 427, 518.
 - hydrolysis of sugar cane by, (30) 811.
 - citrate—
 - effect on phosphates, (31) 125.
 - solubility of calcium phosphates in, (33) 412.
 - citrate solution—
 - apparatus for preparing, (27) 8.
 - neutral, notes, (28) 19.
 - neutral, preparation, (26) 709; (27) 110; (28) 312; (29) 203, 718; (31) 410.
 - preparation, (32) 116, 804; (38) 205.
 - compounds—
 - assimilation by streptothrix, (27) 621.
 - effect on baking quality of flour, (30) 555.
 - of fatty acids, properties, (26) 23.
 - stereochemistry and biological action, (35) 435.
 - humate as a source of nitrogen for plants, (30) 721.
 - hydroxid, use in extraction of rosin, (34) 412.
 - magnesium phosphate—
 - from urine, (40) 320.
 - precipitation in presence of ammonium citrate, (32) 804.
 - nitrate, displacement of potash by, (37) 321.

Ammonium—Continued.

- nitrate, effect on—
 - germination of dodder, (27) 28.
 - nitrogen-assimilating bacteria, (38) 724.
 - nodule formation, (37) 133.
 - plants, (28) 225.
 - soils, (26) 216; (28) 520.
 - solubility of iron phosphate, (37) 324.
- nitrate—
 - fertilizing value, (27) 342; (29) 423; (31) 518, 822; (32) 831; (33) 25; (34) 130, 518; (35) 215, 427, 518; (36) 626, 818; (37) 739; (39) 726; (40) 622.
 - for mangels, (29) 830.
 - manufacture, progress in, (29) 730.
 - preparation, (38) 310.
 - production, (32) 423.
 - utilization by soil fungi, (39) 623.
- oxalate, nitrification rate, (32) 124.
- permutite, fertilizing value, (29) 127.
- persulphate, effect on germination of seeds, (26) 820.
- phosphate, effect on—
 - decomposition of soy bean fodder, (40) 214.
 - germination of seeds, (29) 328.
- phosphate, fertilizing value, (35) 519; (39) 622.
- presence in plants, (38) 629.
- salt, peculiar plant physiological action of, (34) 724.
- salts—
 - absorption and solution in soils, (35) 512.
 - absorption by plants, (35) 433, 435.
 - and soil constituents, interaction, (32), 121.
 - as feed for pigs, (31) 265.
 - assimilation by plants, (32) 121.
 - bacterial oxidation, (33) 124.
- salts, effect on—
 - baking quality of flour, (26) 356.
 - dogs, (28) 568.
 - nodule production, (32) 727; (33) 134.
 - phosphorites, (35) 816.
 - plants, (32) 538.
 - solubility of phosphates, (36) 626.
- salts—
 - fertilizing value, (38) 121.
 - flocculating power on clay, (27) 620.
 - manufacture, (28) 424.
 - metabolism of, (30) 64.
 - method of testing, (27) 208.
 - ninhydrin reaction with, (35) 614.
 - nitrification in soils, (26) 722.
 - separation from fatty acids, (26) 112.
 - utilization by plants, (27) 634; (29) 133.
- sodium sulphate, fertilizing value, (35) 218, 325.
- sulphate—
 - action as affected by distribution in soils, (35) 518.
 - action on muscovite, (37) 505.
 - absorption by soils and quartz sand, (37) 721.
 - analysis, (39) 222.
 - application, (34) 24; (38) 624.
 - as affected by lime, (26) 320.
 - as top-dressing for grains, (37) 29.
 - as winter spray for fruits, (30) 641.
 - availability, (40) 125.
- sulphate, availability—
 - in presence of sodium nitrate, (38) 723.
 - in relation to soil reaction, (37) 521.
 - of nitrogen in, (35) 123; (39) 817.
- sulphate containing sulphocyanid, fertilizing value, (31) 422.
- sulphate, effect on—
 - acid soil, (39) 627.
 - action of phosphates, (35) 326.
 - assimilation of phosphates, (29) 318.
 - Azotobacter, (31) 721.
 - bacterial flora of soils, (28) 815.
 - burning quality of tobacco, (38) 140.
 - carnations, (36) 446.
 - composition of meadow hay, (34) 620.
 - decomposition of feldspar, (30) 126.
 - decomposition of soy bean fodder, (40) 214.
 - disease susceptibility in cereals, (29) 844.
 - germination and growth of barley, (40) 218.
 - germination of seeds, (29) 328.
 - grass lands, (30) 133.
 - growth of soy beans, (40) 30.
 - hydrogen-ion concentration in soils, (39) 425.
 - legume bacteria, (29) 733.

Ammonium—Continued.

- sulphate, effect on—continued.
 - marsh plants, (29) 531.
 - milk, (27) 506.
 - nitrification, (29) 21.
 - nitrogen fixing power of Azotobacter, (29) 527.
 - nodule formation, (37) 133.
 - Penicillium variable, (29) 529.
 - phosphorite, (29) 624.
 - plants, (27) 634; (28) 225.
 - resistance of grain to hail, (30) 519.
 - rotation of lactose, (33) 415.
 - soil acidity, (28) 137; (37) 815; (38) 20, 620.
 - soils, (27) 622; (28) 520; (29) 417; (30) 220.
 - solubility of calcium and phosphoric acid, (39) 23.
 - solubility of phosphates, (28) 818.
 - weed growth in meadows, (38) 141.
 - yield of rubber, (31) 444.
- sulphate—
 - fertilizing value, (26) 42, 125, 323, 324, 329, 330, 425, 534, 536, 629, 630, 635, 725, 829, 837; (27) 135, 218, 336, 724, 832, 833, 837; (28) 521, 533, 723, 724, 725, 736, 827, 832; (29) 23, 125, 127, 213, 829, 831; (30) 125, 427, 437, 526, 626, 632, 736, 835; (31) 36, 37, 124, 137, 517, 518, 731, 820, 829; (32) 323, 831, 832; (33) 33, 219; (34) 24, 25, 128, 129, 131, 219, 518, 520, 622, 820; (35) 30, 126, 218, 323, 325, 336, 427, 518, 519; (36) 121, 134, 332, 338, 637, 818, 833; (37) 123, 229, 321, 426, 539, 627, 636, 733, 739, 824; (38) 135, 137, 218, 229, 516, 517, 624; (39) 32, 241, 328, 428, 438, 529, 530, 537, 622, 623, 726, 817; (40), 134, 626, 633, 824.
 - for arid soils, (34) 621; (36) 726.
 - carnations and roses, (29) 840.
 - coffee, (40) 43.
 - grass land, (33) 527; (36) 438.
 - lawn grasses, (40) 125.
 - moor soils, (39) 438.
 - peat soils, (39) 428.
 - pineapples, (38) 748.
 - potatoes and sugar beets, (31) 833.
 - rubber trees, (26) 339.
 - sugar cane, (32) 336; (36) 219; (40) 242, 533.
 - fractioning of complement with, (33) 280.
 - from ammonia and sulphur dioxide, (29) 24.
 - from peat, (31) 321; (39) 425.
 - history and manufacture, (34) 423.
 - imports into United States, (26) 324.
- sulphate industry—
 - in Austria-Hungary, (33) 822.
 - in Germany, (31) 30.
 - in Great Britain, (39) 522.
 - status, (27) 128, 519.
- sulphate, injurious—
 - effect, (38) 624.
 - to fish, (29) 821.
 - to plants, (34) 135.
- sulphate—
 - long-continued use, (34) 131, 622.
 - loss from soils, (29) 211.
 - manufacture, (30) 721.
- sulphate, manufacture—
 - and use, (27) 624; (35) 428.
 - from sewage sludge, (26) 624.
 - in United States, (27) 22.
 - progress in, (28) 818.
- sulphate, nitrification, (34) 127.
- sulphate, nitrification—
 - in acid soils, (30) 626.
 - in soils, (26) 319; (31) 818; (39) 814.
 - rate, (32) 124.
- sulphate—
 - nitrogen assimilation from, (27) 331.
 - oxidation, (39) 619.
 - preparation, (40) 801.
 - production, (39) 428.
- sulphate, production—
 - and use, (27) 327, 420; (29) 126, 213, 318, 517; (30) 126; (32) 425, 517; (33) 218, 219.
 - from peat, (34) 822.
 - from sewage, (34) 424.
 - in France, (27) 727.
 - in Natal, (40) 127.
 - in 1913, (31) 725.
 - in 1915-16, (37) 524, 721.

Ammonium—Continued.

- sulphate—
 relation to citrus chlorosis, (39) 458.
 secondary and subsidiary effects, (30) 26.
 source, production, and use, (38) 817.
 storage on the farm, (40) 25.
 trade in, (31) 29.
 use, (39) 117.
 use against weeds, (29) 530.
 use in combination with salt, (33) 220.
 use on calcareous soils, (32) 622.
 use on peat soils, (37) 135; (38) 433.
 v. sodium nitrate for sugar beets, (31) 422.
 sulphid, fungicidal value, (37) 43; (38) 853.
 sulphite, fertilizing value, (29) 521.
 toxicity toward plants, (30) 128.
 vanadate, fertilizing value, (30) 627.
 Ammophila spp., bionomics, (35) 468.
 Ammospermophilus leucurus cinnamonus, prevalence in Colorado, (28) 652.
 Ambiliinae, new genera, (38) 767.
 Amoeba—
 cucumeris n.sp., description, (35) 454.
 lobospinosa n.sp., notes, (27) 356.
 neolegicidii, notes, (36) 782.
 n.sp., descriptions, (31) 420.
 sp., relation to blackhead in turkeys, (26) 487.
 Amoebiasis in fowls, studies, (26) 89.
 Amoebotaenia sphenoides, anatomy and life history, (35) 81.
 Amora rohituka, oil content, (31) 234.
 Amorbia emigratella, notes, (27) 155, 657; (31) 249.
 Amorphophallus tuberos, analyses, (29) 463.
 Amorphota—
 ephestia n.sp., description, (28) 162.
 ephestia, notes, (27) 564.
 sp., parasitic on beet webworm, (26) 250.
 Ampelodesma mauritanica, culture and use, (33) 131.
 Ampelographical station, new, in Spain, (26) 398.
 Ampelopsis—
 hederacea, autumn coloration of, (31) 34.
 tricuspidatum, cladosporium disease, (31) 347, 844.
 Amphilausta caribaea injurious to plants, (38) 761.
 Amphibians—
 of North America, check list, (39) 655.
 of Pennsylvania, (31) 648.
 Amphicerus—
 bicaudatus, see Apple twig borer.
 punctipennis, notes, (30) 255.
 Amphimixis in Spirogyra inflata, (34) 370.
 Amphiscopa bivittata as a cranberry pest, (38) 559.
 Amphistomum subtriquetrum, studies, (33) 659.
 Amphrophora cicutae n. sp., description, (37) 163.
 Amsacta albistriga, notes, (27) 559.
 Amsterdam colonial institute, notes, (36) 699.
 Amygdalase—
 in hypomyces, (30) 241, 805.
 notes, (29) 509.
 Amygdalin—
 as affected by enzymes, (28) 503.
 decomposition by enzyme action, (31) 14.
 effect on fungi, (28) 444.
 from various sources, tests, (29) 509.
 Amygdalinase in hypomyces, (30) 241, 805.
 Amygdalus—
 nana, drought resistance, (36) 734.
 new names in, (37) 220.
 Amylaceous material, feeding stuffs from, (33) 170.
 Amylamins, assimilation by plants, (26) 32.
 Amylase—
 activity, determination in presence of alkaloids, (34) 713.
 as affected by ultraviolet rays, (31) 711.
 in alfalfa, (32) 411.
 cereals, studies, (31) 609.
 dried fodders, (32) 503.
 malt extracts, properties, (31) 410.
 mammary gland, (32) 412.
 potatoes, (35) 634.
 potatoes, pathological alterations in, (34) 428.
 ripening horse beans, (36) 526.
 Amylases—
 action on soluble starch, (36) 315.
 nitrogenous stimulants, (37) 204.
 studies, (30) 463; (40) 504, 608.
 substrate for testing, (36) 315.
 Amylolytic and saccharogenic powers, comparison, (30) 463.

- Amyloidosis in fowls, (39) 393.
 Amyloids, variations of in leaves, (29) 827.
 Amylometer, description, (32) 114.
 Amylomycetes prairii, notes, (28) 761.
 Amylopsin, notes, (34) 257.
 Anabaena sp., notes, (28) 31.
 Anacardium occidentale, notes, (29) 746.
 Anaerobes—
 culture methods, (39) 887.
 pathogenic, biochemistry, (38) 483, 503, 504; (39) 887; (40) 577.
 pathogenic, culture, (40) 677.
 proteolytic, from wounds, (39) 488.
 volatile acids from, (33) 30.
 Anagrus—
 armatus—
 nigriceps n.var., description, (35) 262.
 notes, (31) 752.
 bartheli n.sp., description, (36) 857.
 flaveolus n.sp., description, (30) 856.
 frequens n.sp., description, (37) 856.
 giraulti n.sp., description, (30) 661.
 ovijentatus—
 description, (31) 550.
 notes, (31) 650.
 spiritus, parasitic on San José scale, (29) 758.
 Anagyrella corvina n.g. and n.sp., description, (34) 857.
 Analytical methods—
 editing, (35) 311; (36) 299.
 standard, (35) 415; (38) 506.
 Anametis—
 granulata, notes, (36) 549.
 grisea, notes, (32) 651.
 Anaphes—
 gracilis, parasitic on codling moth, (26) 252.
 sp., notes, (27) 561.
 sp., parasitic on San José scale, (29) 758.
 Anaphoidea—
 conotracheli, notes, (27) 864; (38) 565.
 luna n.sp., description, (32) 852.
 luna, studies, (36) 759.
 Anaphothrips striatus, notes, (27) 356; (31) 351.
 Anaphylactic and immune reactions, studies, (37) 76.
 Anaphylactic shock—
 coagulation reaction in, (35) 486.
 prevention, (40) 579.
 studies, (37) 582; (39) 79.
 Anaphylatoxin—
 and anaphylaxis, studies, (37) 578, 688.
 anthrax and erysipelas, notes, (28) 778.
 effect on heat production in rabbits, (29) 479.
 effect of multiple doses, (37) 580.
 nature, (34) 674.
 poisoning, coagulation reaction in, (35) 486.
 preparation from tubercle bacilli, (30) 184.
 studies, (40) 579.
 Anaphylaxis—
 alimentary, caused by eggs, (32) 178.
 and immunity, (39) 79.
 as affected by salt, (30) 478.
 behavior of blood platelets in, (35) 574.
 cause, (37) 76.
 chronic, kidney lesions in, (34) 878.
 formation from acid-fast bacteria, (30) 481.
 hematic phenomena, (40) 880.
 hypodermal, in cattle and sheep, (37) 379.
 notes, (26) 676; (27) 466; (32) 78, 272.
 papers on, (27) 576; (38) 580.
 parasitic, notes, (38) 689.
 produced by sensitization through vagina, (36) 277.
 production by albumin, (26) 374.
 protein, treatise, (32) 79.
 reaction—
 for detecting meat, (28) 204.
 of vegetable proteins, (31) 377.
 rôle of proteins in, (30) 680.
 value in protein differentiation, (26) 176.
 relation to—
 coagulation of blood, (40) 380.
 diet, (30) 168.
 eclampsia, (26) 375.
 review, (26) 481.
 rôle of enzymes in, (40) 579.
 studies, (27) 378; (30) 180, 201; (33) 82, 385; (34) 778; (36) 677; (37) 178, 578, 688; (38) 78, 181, 182.
 treatise, (31) 277.
 Anaplasma argentinum, notes, (32) 183.

- Anaplasma marginale*—
cultivation in vitro, (35) 678.
culture in vitro, (34) 576.
in Algeria, (30) 282.
in German East Africa, (30) 285.
notes, (26) 173, 584, 882; (28) 284.
(var. centrale), use against anaplasmosis, (26) 584.
- Anaplasmata in anemic vertebrate blood, (35) 782.
- Anaplasmosis—
bovine—
immunization, (32) 476.
in Argentina, (32) 183.
Philippines, (38) 183.
Roman Campagna, (28) 284.
South Africa, (26) 584.
South America, (29) 886.
Turkey, (38) 183.
notes, (26) 173.
studies, (33) 384.
treatment, (27) 482.
canine, notes, (29) 385.
clinical form of piroplasmosis, (33) 281.
immunization, (31) 585; (35) 678.
in Brazil, (31) 85.
horses, camels, and hares, (30) 679.
Russian Turkestan, (37) 374.
sheep, (27) 482; (30) 285.
review of literature, (37) 178.
transmission by ticks, (26) 584, 883; (29) 584.
- Anaplasma—
in erythrocytes of mammals, (29) 478.
nature of, (31) 382; (33) 281.
specificity, (39) 788.
- Anarsia lineatella, see Peach twig moth.
- Anasa—
andresii, notes, (36) 55.
spp., notes, (40) 754.
- Anastatus—
(Antigaster) mirabilis, notes, (31) 650.
bifasciatus in Maine, (37) 459.
semiflavidus n.sp., description, (35) 262.
- Anastrepha—
acidusa, notes, (27) 857.
fraterculus, notes, (29) 652; (40) 56.
fraterculus, studies, (40) 757, 758.
ludens, notes, (26) 860.
ludens, remedies, (31) 757.
peruviana n.sp., notes, (29) 657.
serpentina, notes, (34) 856.
spp., danger of introduction, (39) 467.
syvicola n.sp., description, (34) 554.
- Anatidae—
new genus, (40) 254.
shedding of stomach lining, (38) 457.
- Anatis 15-punctata, studies, (39) 663.
- Anatomy—
bibliography, (32) 860.
history, (38) 572.
microscopic, treatise, (26) 876.
of domestic animals, textbook, (32) 78, 682.
domestic animals, treatise, (30) 276.
the horse, atlas, (32) 584.
the horse, treatise, (32) 278, 682.
vertebrates, treatise and bibliography, (28) 668.
- pathologic—
of man and animals, treatise, (33) 476.
treatise, (27) 576; (28) 178; (31) 276; (32) 270.
- Anax junius, food habits, (34) 549.
- Anchonocranus oleae n.g. and n.sp., description, (28) 561.
- Anchovies, artificial coloration, (27) 809.
- Anchovy—
butter adulteration, detection, (29) 361.
paste, creatinin content, (31) 760.
- Angyllis—
angulifasciana, see Clover leaf-tyer.
comptana, see Strawberry leaf-roller.
nubeculana, see Apple leaf-sewer.
- Andrena—
helianthi, pollination of sunflowers by, (32) 556.
n.spp. from Africa, (39) 566.
notes, (40) 65.
- Andropogon—
aciculatus injurious to horses, (37) 779.
- annulatus—
culture experiments, (31) 524.
notes, (30) 229.
- contortus for cattle, (28) 770.
- Andropogon—Continued.
halepensis and A. sorghum, studies, (33) 221.
rufus for dairy cattle, (32) 471.
- sericeus—
analyses, (27) 68.
culture experiments, (30) 632.
- sorghum—
analyses, (38) 572.
analyses and digestibility, (28) 464.
loss in weight after harvesting, (38) 635.
malting capacity, (40) 808.
pollination and cross-fertilization, (38) 435.
seed position in planting, (40) 635.
short smut of, (38) 850.
spp., seeding on ranges, (30) 35.
spp., analyses, (27) 469, 871; (28) 463, 768; (31) 863.
spp., analyses and digestibility, (27) 871; (32) 167.
spp., hydrocyanic acid content, (27) 77.
spp., notes, (26) 361.
spp., toxicity, (27) 78.
- Andryala ragusina, analyses, (33) 466.
- Anemia—
equine, intracellular bodies, in (27) 576, 684.
equine, studies, (33) 676; (36) 79.
experimental, in dogs, (38) 583.
infectious—see also Swamp fever.
in horses, (27) 181; (28) 184; (32) 881; (36) 581; (37) 82, 382; (38) 689, 788.
in New York, (36) 676.
treatment, (26) 483.
- perniciosa—
in horses, (26) 888; (27) 188; (33) 384, 681; (34) 274, 280, 681; (35) 80, 678; (39) 81.
in rabbits, (30) 479.
metabolism in, (35) 371.
produced by hemolysis from streptococci, (32) 179.
progressive, in ovines, (28) 782.
relation to lime deficiency, (29) 622.
- Anemograph, simple forms, description, (30) 17.
- Anemometer—
kite, calibrating, (35) 619.
records, comparison, (37) 513.
Robinson, (34) 118.
- Anemopheres diaphaniae n.sp., description, (26) 352.
- Aneristus oculatipennis n.sp., description, (35) 761.
- Anesthesia—
and narcosis of animals and birds, handbook, (35) 379.
by chloralose, (39) 885.
effect on hemolytic reaction, (36) 878.
paper on, (29) 500.
production by injection of magnesium sulphate, (35) 484.
- Anesthetics—see also Ether and Chloroform.
effect on—
cyanogenetic compounds of sorghum, (37) 109.
dormant woody plants, (35) 221.
electrical potential in plant and animal tissues, (30) 630.
germination of seeds, (27) 220.
permeability of plant tissues, (28) 732; (36) 29.
plant respiration, (37) 821.
plant roots, (32) 626.
in veterinary surgery, (34) 576.
mechanism of action, (39) 286.
- Aneurism, verminous, in the horse, (37) 82.
- Angelica tyrrhea, notes, (28) 355.
- Angiosperms, disorganization of pollen-sac tapetum cells, (35) 431.
- Angitia—
plutellae n.sp.—
description, (30) 60.
notes, (28) 657.
tineavora n.sp., description, (38) 164.
- Angieworms—
relation to agriculture, (31) 154.
relation to soil bacteria, (29) 316.
- Angoumois grain moth—
affecting Sudan grass, (33) 746.
biology, (38) 862.
control, (39) 363.
notes, (26) 453; (27) 657; (30) 655; (31) 57; (33) 856; (36) 854.

Angoumois grain moth—Continued.

- on corn, (40) 861.
- popular account, (40) 356.
- studies, (37) 356.

Anilin—

- colors, admission into plant cells, (27) 632.
- dyes, acid, anticoagulant action on protein, (35) 880.
- effect on tubercle bacilli, (37) 481.
- sulphate, nitrification rate, (32) 124.

Animal—

- and plant life, treatise, (28) 897.
- and plant tumors, comparison, (29) 548.
- body—
 - adaptability to excessive diet, (26) 262.
 - oxidations and reductions in, (28) 607.
 - regulations of neutrality in, (29) 62.
 - resistance to disease, (26) 276.
- breeders' associations in Germany, (26) 666.
- breeding—*see also* Breeding, Hybridization, and specific animals.
 - age factor in, (31) 367; (35) 868.
 - anatomy and physiology in, (34) 195.
 - and feeding, notes, (28) 279.
 - and genetics, treatise, (39) 672.
 - applicability of pure-line theory, (39) 573.
 - bibliography, (34) 370.
 - biological principles, (28) 666.
 - circuits, discussion, (27) 171.
 - cooperative, in Wisconsin, (28) 593.
 - effect of popular sire in, (34) 370.
 - experiments, suggestions for, (26) 773.
 - fancy points in, (28) 68.
 - for disease resistance, (28) 370.
 - history and development, (28) 583.
 - in ancient times, (28) 466.
 - Bengal, (26) 578.
 - Germany, (33) 168.
 - India, (27) 781; (28) 79; (29) 676.
 - Kafa, Abyssinia, (27) 69.
 - North America, (27) 239.
 - Punjab, (27) 475.
 - Sao Paulo, (27) 69.
- inheritance in "blood lines" in, (26) 162.
- manual, (36) 667.
- notes, (28) 667.
- principles, (27) 172.
- relation to heredity, (26) 161.
- reversion in, (29) 570.
- review of literature, (28) 370, 466; (32) 860; (38) 367.
- selection, (27) 870.
- selection problem in, (38) 64.
- selecting for fancy points in, (26) 162.
- studies, (39) 877.
- studies, mathematics in, (28) 466; (38) 367.
- studies, review, (33) 168.
- systems, formulas for, (38) 268, 269.
- teaching, (26) 162.
- textbook, (26) 573.
- treatise, (27) 469; (28) 271; (33) 71, 267.
- use of averages and relative figures in, (29) 368.
- value of pedigree, (27) 175.
- yearbook, (28) 68.
- by-products—
 - analyses, (27) 670.
 - as fertilizers, (31) 323.
 - utilization, (27) 470.
- calorimetry, studies, (39) 772.
- castration, treatise, (32) 578.
- cells—
 - growth and viability, (28) 272.
 - synthesis, (27) 464.
- chemistry, progress in, (34) 311.
- communities in temperate America, treatise, (32) 549.
- diseases—*see also* specific diseases.
 - act in Canada, (31) 79.
 - book on, (39) 268.
 - caused by Gaertner group bacilli, (39) 488.
- diseases, contagious—
 - in Burma, (26) 374.
 - in India, (29) 676.
 - law in Canada, (26) 881.
 - treatment, (26) 374.
- diseases—
 - control, (39) 582, 884; (40) 778.
 - control by treatment of grass lands, (29) 676.
 - control in Netherlands, (27) 676.

Animal—Continued.**diseases—continued.**

- control in United States, (34) 399; (36) 675.
- control on the farm, (40) 380, 577.
- diagnosis, (27) 77; (29) 477; (33) 279; (34) 81; (36) 575.
- dissemination in South Africa, (36) 678.
- epizootic, in Bengal, (30) 778.
- epizootic in Calcutta and vicinity, (26) 578.
- handbook, (35) 379.
- immunization, (36) 575.
- in Alabama, (37) 687; (39) 679.
- Anglo-Egyptian Sudan, (30) 679.
- Argentina, (35) 678.
- Assam, (32) 81; (36) 879; (40) 380.
- Austria, (34) 674.
- Baluchistan, (37) 274; (40) 284.
- Bengal, (26) 578; (31) 177; (39) 582.
- Bengal and Assam, (30) 180.
- Bihar and Orissa, (30) 577; (32) 272; (36) 879.
- British East Africa, (32) 373; (38) 180.
- British Guiana, (34) 777.
- Burma, (31) 177; (32) 373; (34) 275; (36) 879.
- California, (34) 275; (37) 477; (40) 778.
- Canada, (36) 179, 275; (39) 582; (40) 284.
- Ceylon, (39) 787.
- Denmark, (29) 377; (39) 787.
- Dutch East Indies, (35) 379.
- Egypt, (34) 275; (36) 180, 777.
- England, (36) 275.
- Florida, (37) 477.
- Formosa, (27) 378.
- Germany, (27) 181; (28) 583.
- Glasgow, (28) 178.
- Great Britain, (34) 382; (36) 378, 676; (39) 387; (40) 676.
- Guam, (37) 778.
- Guiana, (27) 377.
- Hawaii, (37) 374.
- India, (27) 781; (28) 79; (35) 483, 784; (37) 274, 477; (38) 180, 482; (39) 81; (40) 183, 284, 380, 676.
- Iowa, (36) 777.
- Ireland, (27) 781; (32) 778; (35) 279; (37) 577; (38) 180.
- Kansas, (40) 778.
- Kentucky, (39) 679.
- Louisiana, (40) 86.
- Madras, (39) 283.
- Maine, (34) 777; (40) 379.
- Maryland, (36) 777.
- Massachusetts, (36) 79; (37) 477; (40) 183.
- Mauritius, (37) 780.
- Michigan, (37) 274.
- Montana, (37) 687.
- Nebraska, (40) 380.
- Nevada, (38) 179.
- New Hampshire, (37) 687.
- New Jersey, (38) 781.
- North Carolina, (40) 880.
- North Dakota, (38) 180.
- Nyasaland, (26) 678.
- Oregon, (32) 778; (37) 374.
- Paris and Department of the Seine, (35) 279; (37) 780; (39) 679.
- Pennsylvania, (37) 577; (40) 183.
- Prussia, (27) 377; (32) 577.
- Punjab, (27) 475; (30) 477; (32) 272.
- Russian Turkestan, (37) 374.
- Saskatchewan, (35) 581.
- Saxony, (28) 79.
- South Africa, (38) 782.
- South Dakota, (40) 183.
- Southern Rhodesia, (37) 688.
- Union of South Africa, (35) 678.
- United Kingdom, (37) 687.
- United Provinces, (34) 777; (36) 676.
- United States, (37) 274; (38) 179.
- Uruguay, (40) 183.
- Wales, (39) 283.
- Washington, (37) 477.
- Wisconsin, (38) 180.
- Wyoming, (37) 477.
- diseases, infectious—
 - bacteria of, (40) 180, 284.
 - diagnosis, (26) 676.
 - disinfection, (26) 483.
 - notes, (26) 276, 581.

Animal—Continued.

- diseases, infectious—continued.
 - specific therapy of, (31) 479.
 - textbook, (27) 76.
 - treatment, (27) 888.
- diseases—
 - investigations of Rockefeller Institute, (34) 498.
 - law in New York, (30) 778.
 - microbiology of, (26) 372.
 - nonbacterial, immunization, (26) 174.
 - notes, (26) 452.
 - protozoan, notes, (36) 880.
 - regulations among American countries, (37) 77.
 - relation to diet deficiency, (29) 66.
 - relation to food supply, (35) 178.
 - resistance to, (32) 270.
 - review of investigations, (31) 177; (33) 876.
 - serum diagnosis, (27) 478; (29) 377.
 - spread through garbage, (34) 274.
 - textbook, (26) 677.
 - tick transmitted, notes, (31) 356.
 - tick transmitted, review, (32) 380.
 - transmission by blood-sucking insects, (26) 150.
 - transmission by dogs, (34) 280.
 - transmission by insects, (36) 479.
 - treatise, (26) 82, 481. (27) 77, 377, 679; (28) 778; (29) 880; (32) 79, 371, 474, 874; (34) 333; (36) 477, 478; (37) 876; (40) 778.
 - treatment, (26) 578; (32) 578; (37) 876.
- ecology—
 - studies, (32) 549.
 - treatise, (30) 454.
- enemies of agricultural plants, treatise, (32) 752.
- experimentation and medical progress, (33) 876.
- extracts, effect on milk secretion, (26) 370; (28) 175; (30) 375.
- fats and oils, effect of free fatty acids on, (34) 312.
- fats, digestibility, (34) 364.
- feeding, textbook, (31) 468.
- ferments, saccharification of starch by, (28) 609.
- fluids, determination of viscosity, (26) 374.
- food—
 - for poultry, (33) 572.
 - products in United States, (38) 865.
 - products, transportation, (32) 76.
- genetics and eugenics, treatise, (40) 274.
- growth, treatise, (26) 658.
- heat and bio-energetics, treatise, (26) 265.
- heat, origin, (30) 563.
- husbandry—
 - bibliography, (28) 492.
 - courses in, (33) 696; (36) 595; (38) 897; (40) 492, 599.
 - experimental work, redirection, (30) 106.
 - extension course for boys' and girls' clubs, (35) 396.
 - in Denmark, (27) 391; (30) 91.
- husbandry instruction—
 - development of, (33) 493.
 - in high schools, (34) 195.
 - in United States, history, (35) 897.
- husbandry—
 - lessons on, (32) 597; (35) 592.
 - review of literature, (29) 271.
 - students, fundamental sciences for, (38) 896.
 - textbook, (28) 795; (29) 598.
- hybridization in United States, (26) 163.
- industry—*see also* Animal production.
 - in Alaska, (33) 666.
 - Kongo, (31) 865.
 - Philippines, (26) 666.
 - Russia, (29) 570.
 - instruction in United States, (28) 597.
 - inspection in Glasgow, (23) 375.
 - insurance societies in Holland, (30) 296, 493.
- life—
 - chemistry of, treatise, (30) 310.
 - relation to meteorology, (26) 513.
 - relation to saprophytic bacteria, (28) 570.
- liquids, drying, (28) 610.
- matter, showers of, (37) 808.
- meal—
 - analyses, (26) 362; (28) 265.
 - analyses and feeding value, (26) 468.
 - sterilized, manufacture, (38) 423.

Animal—Continued.

- metabolism, phosphorus compounds in, (32) 601, 858.
- micrology, handbook, (37) 155.
- morphology, history, (38) 572.
- nutrition—
 - American society, (27) 469.
 - mineral elements in, (35) 867.
 - pathological aspects, (32) 99.
 - phosphates and wheat bran in, (31) 762.
 - phosphorus compounds in, (29) 869.
 - primer, (28) 265.
 - principles of, (26) 164.
 - problems in, (29) 169.
 - review of literature, (33) 169.
 - studies, (35) 670.
 - studies of Bureau of Animal Industry, (27) 469.
 - studies, progress in, (30) 101.
 - subnormal plane, (36) 669.
 - treatise, (30) 67.
 - value of proteins in, (27) 276.
 - vitamin factor, (40) 577.
- oil, detection in ethyl alcohol, (29) 312.
- organism—
 - as a machine, (32) 258.
 - defensive ferments of, (31) 278; (32) 270.
 - defensive ferments of, treatise, (30) 77.
- organisms—
 - energy transformations in, (30) 466.
 - growth in, (32) 165.
 - relation to soil formation, (26) 223.
- organs—
 - manganese content, (30) 562.
 - phosphorus content, (30) 669.
- parasites affecting livestock—
 - in India, list, (33) 279.
 - in Ohio, (33) 279.
- parasites—
 - and diseases, treatise, (32) 79.
 - and human disease, (39) 582.
 - atlas and textbook, (31) 576.
 - biological detection, (31) 281.
 - chemistry of, (32) 78.
 - detection, (26) 481.
 - effect of hibernation and migration on, (27) 655.
 - external, collecting, (38) 760.
 - handbook, (27) 779.
 - in Australia, (32) 377.
 - Belgian Kongo, (27) 77.
 - British Guiana, (37) 155.
 - Colorado, (26) 865.
 - Guam, (35) 460.
 - human feces, (37) 848.
 - man, treatise, (36) 152, 354.
 - Paraguay, (38) 580.
 - invasion by bacteria, (28) 681.
 - notes, (26) 452; (38) 459.
 - protozoan, notes, (27) 181.
 - remedies, (31) 50.
 - treatise, (31) 478; (32) 777.
- parasitology, treatise, (36) 574.
- pests—
 - and plant diseases, treatise, (28) 752.
 - of alfalfa, (31) 648.
- physiology, progress in, (29) 408.
- pigmentation, studies, (32) 360.
- pigments, bibliography, (32) 18.
- poisons, notes, (32) 78.
- power, measuring, (27) 666.
- production—
 - bibliography, (36) 468.
 - in Chile, (30) 671.
 - in Germany, (30) 170.
 - review of German literature, (31) 467.
 - review of literature, (26) 266; (32) 566.
 - textbook, (29) 570; (35) 167.
- products
 - ash analyses, (29) 861.
 - exports, (34) 194.
 - in United States, (34) 393.
 - middlemen's function in, (33) 787.
 - prices and movement in Chicago, (33) 787.
 - prices in Switzerland, (26) 573.
 - purin content, (40) 205.
- quarantine—
 - laws, (32) 679.
 - regulations in Canada, (26) 881.
 - regeneration, notes, (28) 68.

Animal—Continued.

- regeneration, treatise, (26) 163.
- relationships, symbolic statement, (28) 173.
- slaughter law in Massachusetts, (27) 65.
- species, identification, (36) 380.
- species, origin of, (26) 162.
- statistics in Germany, (29) 70.
- substances, conversion into fertilizers, (28) 125.
- tissues—
 - autolysis, (39) 608.
 - distribution of fluorin in, (28) 506.
 - electrical potential in, (30) 630.
 - exchange of energy in, (33) 567.
 - for laboratory examination, (36) 676.
 - indicators from, (35) 204; (39) 804.
 - stimulation by Roentgen rays; (30) 729.
 - water content, (29) 767.
- Animals—*see also* Live stock, Cattle, Sheep, *etc.*
 - adaptations in, (26) 347.
 - and plants, heliotropism in, (33) 129.
 - anesthesia and narcosis of, (35) 379.
 - artificial insemination, (27) 274.
 - as affected by—
 - environment, (26) 392.
 - eosin, (28) 880.
 - inbreeding, (31) 564.
 - as transformers of energy, (32) 860.
 - associated with ants, (26) 348.
 - blood parasites of, (33) 152.
 - blood relationship, studies, (28) 875; (30) 68; (32) 861; (35) 372.
 - bone content, (31) 564.
 - boron in, (28) 370; (30) 168.
 - breeding, root crops for, (26) 95.
 - castrated, abnormal bone growth in, (26) 471.
 - castration without surgical operation, (28) 466.
 - cause of death in, (27) 888.
 - classification, (36) 411.
 - classification, scientific basis, (31) 804.
 - coat color in, chemistry of, (33) 667.
 - cold-blooded, metabolism experiments, (30) 563.
 - color disguise in, treatise, (26) 246.
 - color variation and chromatic skin function of, (33) 168.
 - dead, fertilizer from (33) 219.
 - death-feigning instinct, (37) 559.
 - descent of, (29) 68.
 - destructive, control, (40) 254.
 - diagnostic inoculation with tuberculous material, (27) 184.
 - distribution, treatise, (31) 846.
 - domestic—
 - anatomy of, (32) 78.
 - bones of, (28) 767.
 - breeding and improvement, (33) 71.
 - breeds, origin, (27) 172.
 - calliphorine cutaneous parasites, (27) 656.
 - castration of, (33) 176.
 - danger of contaminated streams to, (29) 880.
 - dissection guide, (26) 578.
 - early maturity in, (26) 471.
 - factors limiting fertility, (32) 465.
 - fleas infesting, (26) 349.
 - hair and hair colors, (27) 369.
 - history, (28) 271, 667.
 - imported, in East Africa, (26) 768.
 - improvement, (27) 467; (33) 297.
 - inheritance in, (29) 665.
 - insects affecting, (26) 780: (27) 53, 453, 552; (28) 753, 855; (29) 252; (32) 448; (33) 746.
 - lysol poisoning in, (26) 581.
 - mucous membrane of, (26) 480.
 - of ancient Crete, (29) 169.
 - ancient Egypt, (27) 371.
 - Europe, origin, (26) 267.
 - Mediterranean islands, (26) 267.
 - parasitology of, (26) 882.
 - pulse rate of, (28) 768.
 - reproductive organs, (27) 369.
 - restraint of, treatise, (26) 678.
 - sea-transport regulations, (34) 575.
 - size of cell as factor, (27) 174.
 - skull and head measurements, (28) 767.
 - susceptibility to plague, (26) 280.
 - textbook, (32) 494.
 - variability in, (34) 370.
- domestication, (27) 771; (30) 670.
- double formations or composite monsters, (27) 576.
- early maturity in, (33) 71.

Animals—Continued.

- electric stimulation of, (30) 674.
- embryonic deformities in, (27) 274.
- evolution in, (28) 466.
- exercises with, for rural schools, (34) 292.
- experimental rooms for, (29) 167.
- fasting, tissue changes in, (33) 464.
- fecundity in, (28) 767.
- feeding—
 - treatise, (28) 465.
 - under germ-free conditions, (34) 564.
- feral, nervous system, (27) 870.
- fly repellents for, (32) 59.
- food—
 - lymph glands, (27) 180.
 - parasites transmissible to man, (37) 355.
 - prices in Germany, (30) 896.
- fumigation for external parasites, (35) 656.
- fungus parasites of, (32) 271.
- fur-bearing, *see* Fur-bearing animals.
- gall-like formations in, (26) 243.
- game, treatise, (33) 77.
- glandular cell structure in, (28) 272.
- growth of, (30) 467; (34) 305.
- guide for study, (27) 492.
- herbivorous, feeds of animal origin for, (26) 567.
- hibernation, (37) 156.
- hyperimmunizing for anti-rinderpest serum, (27) 380.
- immunization—
 - against nonbacterial diseases, (26) 174.
 - errors in, (31) 178.
- importation into Brazil, (34) 372.
- in zoological gardens, blood parasites, (27) 477.
- inheritance in, (28) 876.
- injurios—
 - handbook, (27) 452.
 - in Colorado, (34) 651.
 - in Ireland, (29) 555; (33) 554.
 - in Russia, (26) 693; (31) 547; (33) 856.
 - laws in Michigan, (26) 59.
 - notes, (26) 452.
 - to *Azalea indica*, (30) 247.
 - cacao, (30) 246.
 - crops, (30) 349, 649.
 - plants, (29) 547, 645.
 - sugar beets, (28) 654; (30) 853; (31) 58, 649; (34) 350.
 - tobacco, (29) 551.
 - vegetables, (27) 438.
- laboratory—
 - blood of, (28) 777.
 - identification, (35) 880.
 - kymograph for, (32) 565.
 - nutrition of, (36) 161.
- lime requirements, (29) 65.
- lower, fertilization in, (29) 167.
- male domestic, sterility and impotence in, (28) 571.
- manganese in, (27) 500, 670.
- meat-producing, lymphatic glands, (34) 876.
- meat, production and marketing, (26) 92.
- Mendelian characters in, (28) 370, 531.
- metabolism experiments, (26) 161, 265; (29) 62.
- mineral, balance of, (31) 663.
- mineral metabolism of, (35) 100.
- minimal lethal dose for, (33) 81.
- nutritive requirements, (31) 662.
- of America, treatise and bibliography, (27) 855.
- Australia, blood examination, (36) 879.
- District of Columbia, (40) 160.
- South India, treatise, (34) 549.
- Yellowstone Park, (40) 350.
- organisms in digestive tract of, (34) 564.
- paralysis in, investigations, (26) 185.
- periodic events, (39) 317.
- pet and laboratory, care and feeding, (28) 173.
- phosphorus content, (33) 167.
- physiology of response in, (27) 368.
- pigmentation in, (29) 466.
- poisoning by plants, (26) 86.
- poisonous, of desert, (39) 153.
- predatory—
 - control in range States, (31) 868.
 - extermination, (39) 555.
- prepotency in, (32) 861.
- price in Switzerland, (26) 573.
- purebred, registration in Brazil, (34) 372.
- ratio of heat production to body weight, (29) 569.

Animals—Continued.

- response to stimuli, (32) 222.
 - seed destroying, combating, (29) 545.
 - sex-limited inheritance in, (30) 525.
 - skull measurements, (27) 69, 467.
 - slaughtering, (27) 279.
 - small—
 - breeding in Netherlands, (31) 596.
 - immunization, (26) 676.
 - respiration apparatus for, (33) 265; (34) 370.
 - structure terminology of, (29) 665.
 - studies of form, (28) 466.
 - susceptibility to—
 - infectious bulbar paralysis, (33) 179.
 - pneumonic plague, (28) 180.
 - tolerance to ammonia gas, (26) 373.
 - transmission of acquired characters in, (28) 531.
 - transportation, (27) 781.
 - transportation regulations in Germany, (27) 775.
 - tuberculous—
 - inspection, (34) 575.
 - kidney changes in, (26) 379.
 - role in infection of man, (29) 382.
 - uniparous, multiple gestation in, (28) 467.
 - urine and other excretions of, treatise, (26) 480.
 - utilization of mineral phosphates by, (29) 870.
 - variations in, treatise, (26) 227.
 - velocity of transmission of excitation in, (34) 29.
 - vertebrate, pulse rate in, (27) 68.
 - wanderings of, treatise, (31) 57.
 - warm-blooded—
 - calorimeter for, (27) 367.
 - calorimetric experiments on, (29) 569.
 - size of organs, (28) 375.
 - wild—
 - and domestic, structure of limb bones, (28) 767.
 - diseases of, (34) 576.
 - in-and-in breeding, (27) 671.
 - National reservations for, (28) 56.
 - of North America, (35) 354; (40) 646.
 - of the world, (39) 859.
 - restocking ranges, (40) 646.
 - young, mother's milk v. foreign milk for, (31) 174.
- Anions, antagonism between, (33) 323.**
- Anisandrus—**
- dispar—
 - notes, (30) 161.
 - remedies, (40) 547.
 - studies, (29) 858.
 - pyri, *see* Pear-blight beetle.
- Anise—**
- extermination, (30) 838.
 - seed refuse for cows, (28) 372.
- Aniseed oil, insecticidal and larvicidal value, (34) 359.**
- Anisoclavia 12-maculata, notes, (33) 58.**
- Anisomyxa plantiginis n.g. and n.sp., studies, (31) 327.**
- Anisoplia—**
- austriaca, biology and remedies, (32) 452.
 - austriaca, notes, (31) 155.
 - spp., notes, (32) 453.
- Anisoscellini, key, (39) 361.**
- Anisostigma schenckii, analyses and digestibility, (27) 872; (32) 167.**
- Anisota senatoria, notes, (29) 353.**
- Ankylostoma—**
- caninum, dissemination by flies, (30) 659.
 - duodenale, transmission by flies, (38) 563.
 - ova, fate in house-fly larvae, (39) 468.
- Anatto—**
- extract, effect on digestion, (26) 68.
 - substitute, effect on digestion, (26) 68.
- Annona—**
- cherimolia—
 - crown gall affecting, (28) 447.
 - notes, (27) 242.
 - propagation, (31) 441; (32) 143.
 - diversifolia n.sp., description, (26) 743.
 - in Hawaii, (37) 345.
 - spp., possibilities of, (29) 642.
 - spp., propagation, (27) 537.
- Annonas, classification, (31) 339.**
- Anobiidae, catalogue, (30) 458.**
- Anobium—**
- domesticum in New Zealand, (40) 169.
 - rufipes, notes, (36) 853.
- Anoecia—**
- n.sp., nematodes affecting, (35) 658.
 - queri, notes, (36) 551.
- Anogeissus latifolius—**
- gums of, (31) 409.
 - notes, (29) 443.
- Anomala—**
- aenea, notes, (34) 454.
 - beetle in Hawaii, (40) 854.
 - beetle, natural enemies, (38) 557.
 - binotata—
 - life history, (38) 863.
 - notes, (28) 156; (30) 657.
 - marginata, notes, (37) 660.
- Anomalini of Germany, (35) 661.**
- Anomalon sp., parasitic on grapevine sphinx, (26) 250.**
- Anomis n.spp., descriptions, (29) 456.**
- Anomopteris fascipennis n.g. and n.sp., description, (31) 554.**
- Anopheles—*see also* Mosquitoes and Malaria.**
- albimanus, relation to malaria, (32) 348.
 - anatomical studies, (35) 659.
 - apicimacula, relation to malaria, (32) 348.
 - as hosts of malarial parasites, (38) 160.
 - barianensis, notes, (35) 759.
 - bifurcatus—
 - destruction of larvae, (26) 560.
 - notes, (30) 361.
 - parasite of, (39) 766.
 - classification and habits, (39) 158.
 - control, (39) 158.
 - crucians—
 - malaria parasites in, (35) 759.
 - studies, (40) 552.
 - Egyptian, as malaria carriers, (40) 262.
 - flight of, (35) 258.
 - hylephilus n.sp., description, (37) 565.
 - identification, (39) 562.
 - in Transvaal, (26) 173.
 - infectibility, (37) 463.
 - larvae—
 - bacillary parasite, (40) 552.
 - destruction, (27) 452.
 - winter hibernation, (40) 457.
 - maculipennis, relation to tertian malaria, (39) 156.
 - malarial, studies, (40) 168.
 - notes, (29) 856; (37) 565.
 - punctipennis—
 - as host of tertian plasmodial infection, (36) 255.
 - breeding, (34) 358.
 - infectibility, (36) 757.
 - relation to malaria, (34) 358; (40) 168.
 - quadrinaculatus—
 - breeding in deep water, (40) 168.
 - breeding in rice fields and flight distance, (40) 857, 858.
 - entangling in spider webs, (29) 861.
 - flight of, (37) 853.
 - prevalence in malaria districts, (33) 749.
 - transmission of malaria by, (35) 360, 361; (36) 460.
- Anophelinae—**
- in British Columbia, (35) 755.
 - Indian, nomenclature, (35) 759.
- Anoplocephala—**
- perfoliata, notes, (36) 183.
 - spp., notes, (40) 186.
- Anoplocephalidae, studies, (33) 863.**
- Anopluura—**
- n.sp., descriptions, (36) 552.
 - of North American mammals, (36) 253.
- Anovulvitis in cattle, (33) 774.**
- Antelopes, relation to Trypanosoma gambiense, (28) 80.**
- Antennaria dioica, hydrocarbons in, (26) 107.**
- Antennulariella fuliginosa n.g. and n.sp., description, (36) 245.**
- Anteoninae, studies, (39) 870; (40) 265.**
- Anteris nepae n.sp., descriptions, (38) 264.**
- Anthaxia manca, notes, (30) 455.**
- Anthelmintic—**
- investigations, (40) 477, 482, 684.
 - investigations, differentiation of lesions in, (39) 791.
 - medication, principles, (38) 782.

- Anthemelmintics**—
effect on parasites, (28) 80.
efficacy, (38) 883.
testing on earthworms, (40) 187.
- Anthemis**—
disease, notes and treatment, (27) 354.
nobilis, constituents of flowers, (33) 202.
- Anthephora**—
hochstetteri, analyses and digestibility, (27) 871.
spp., analyses and digestibility, (32) 167.
- Antheraea peryni**, notes, (38) 361.
- Anthicidae**, catalogue, (26) 560.
- Anthidium** spp., bionomics, (35) 468.
- Anthistiria**—
avenacea, analyses, (27) 68.
gigantea, production, (40) 243.
membranaeae, analyses, (28) 403.
spp., analyses, (27) 469; (30) 565.
- Anthoboscinae**, studies, (28) 455.
- Anthoceros**, chondriosomes, (39) 332.
- Anthocoptes** n.sp., description, (30) 362.
- Anthocyanidins**—
formation in plants, (31) 626.
production, (33) 329.
- Anthocyanin**—
as effected by oxidase, (38) 128.
constitution, (36) 127.
distribution in plants, (28) 227.
electric charge of, (34) 525.
experimental production, (30) 729.
formation, (35) 333, 523.
formation—
in flowers, (31) 34, 427; (33) 427.
in Hedera, (30) 432.
in plants, (27) 634; (28) 36; (29) 219, 421;
(30) 129, 729; (31) 34, 128, 224, 626; (32)
202, 428, 524, 824; (33) 523, 824; (37) 25.
relation to mitochondria, (29) 827.
- Antirrhinum**, (32) 202, 203, 220.
blossoms and fruits, (32) 309.
plants, (32) 428.
plants, treatise, (37) 633.
- isolation**, (34) 710.
markings and cell mutation, (36) 222.
origin, (33) 224.
preparation, (34) 710.
production, (33) 329.
products, origin and transformation, (35) 130.
relation to coloration of flowers, (28) 227.
review of literature, (34) 335.
sensitiveness to ultraviolet rays, (27) 827.
studies, (27) 228; (31) 324; (33) 627; (34) 223, 709;
(39) 224; (40) 819.
- Antholyza bicolor**, fertilization by birds, (28) 531.
- Anthomyia**—
antiqua, biology, (33) 746.
brassicae, remedies, (26) 256.
brassicae, treatment, (33) 848.
- Anthomyidae**—
carnivorous larvae of, (35) 363.
investigations, (37) 764.
revision, (30) 254.
subfamily keys, (38) 61.
- Anthonomes**, notes, (38) 654.
- Anthonomus**—
druparium, notes, (27) 255.
eugenii, notes, (28) 657.
- fulvus**, destruction by white fungus, (26) 454.
grandis, see Cotton boll weevil.
grandis thurberia—
n.var., description, (30) 57.
notes, (31) 350.
relation to cotton culture, (33) 257.
- hicoriae**, notes, (37) 560.
pedicularis in Bessarabia, (38) 163.
- pomorum**—
in Russia, (34) 857.
notes, (31) 848; (33) 652.
parasites of, (29) 562; (40) 65.
quadrigrubus, see Apple curculio.
rubi, notes, (29) 658.
signatus, see Strawberry weevil.
spp., biology and remedies, (33) 750.
spp., notes, (27) 54; (30) 357.
suturalis, notes, (33) 352.
vestitus, notes, (29) 562, 658; (32) 658.
vestitus, studies, (28) 162.
- Anthostomella**—
arecae n.sp. notes, (37) 148.
cofeae, notes, (38) 51.
sullae, notes, (26) 747.
- Anthothrips**—
aculeata, notes, (28) 452.
floridensis, notes, (35) 852.
verbasci, parthenogenesis in, (36) 252.
verbasci, sex determination in, (38) 558.
- Anthoxanthum odoratum**, germination tests, (28) 327; (29) 143.
- Anthracene**—
as wood preservative, (27) 314.
effect on plants, (38) 647.
- Anthraccenic oil** for waterproofing cement, (35) 493.
- Anthrax**—
address on, (31) 878.
affecting man, (37) 179.
anaphylatoxin, notes, (28) 778.
bacillus—
agglutination, (40) 779.
anaphylaxis against, (27) 577.
and pseudoanthrax bacilli, relationship,
(30) 682.
as affected by low temperature, (32) 81.
as affected by ultraviolet rays, (31) 379;
(32) 475.
capsule formation, (34) 877.
destruction by tanning process, (26) 84.
detection in bone marrow, (33) 676.
detection in foodstuffs, (27) 478.
disinfection by cinchona alkaloids, (40)
478.
from a contaminated stream, (32) 373.
hemolytic powers, (31) 878.
historical review of discovery, (33) 773.
immunization, (27) 781.
in fish meal, (33) 281.
natural immunity against, (29) 378.
protective action of capsule, (26) 781.
resistance to sodium chlorid solution, (37)
79.
staining, (34) 781.
toxin formation by, (27) 781.
virulent, in saliva of horses, (30) 83.
vitality of, (31) 281.
- control in**—
England, (36) 275.
Michigan, (37) 274.
- detection, precipitation method**, (33) 386.
diagnosis, (26) 375, 678; (27) 80, 284, 378, 478, 680,
781; (28) 376, 477, 583, 778; (29) 281, 378, 778;
(30) 180, 181, 480; (31) 282, 578, 878; (33) 579;
(34) 81, 676, 781; (35) 74; (36) 676; (38) 886.
- dogs** as carriers, (39) 633.
eradication, (26) 483; (37) 179.
- fulvohirta**, notes, (34) 556.
immunity of fowls and pigeons to, (40) 186.
immunization, (26) 279, 483, 578, 676; (27) 80; (28)
376, 778; (30) 181, 780; (31) 82, 577, 878; (32) 273;
(33) 387, 580; (34) 185, 579, 879; (35) 74; (36) 675;
(37) 479; (39) 81, 183; (40) 582.
- in birds**, (28) 678.
hogs, (26) 177; (28) 886; (31) 182.
hogs, diagnosis, (27) 577.
man, (26) 84; (36) 277.
man, treatment, (38) 586.
sheep, (29) 582.
- infection from**—
hides and skins, prevention, (26) 781.
wool and hair, (40) 783.
- intestinal**, in swine, (29) 888.
n.spp., descriptions, (37) 565.
nature and treatment, (26) 883.
notes, (26) 279, 373; (27) 81, 475, 576; (32) 778;
(34) 573, 879; (36) 678, 779; (38) 179, 784; (39)
387; (40) 86, 676, 778.
- outbreak**—
among tannery workers, (37) 79.
due to tannery refuse, (32) 373.
- outbreaks in England**, (38) 232.
precipitation, control extracts for, (32) 579.
- prevalence in**—
Great Britain, (27) 680; (31) 177; (34) 382;
(36) 378.
Hawaii, (38) 80.
Japan, (31) 82.
Panama, (28) 79.
Prussia, (27) 181.

Anthrax—Continued.

- relation to buzzards, (28) 79.
 - resistance in fowls, (27) 378.
 - review of investigations, (38) 182.
 - serodiagnosis, (31) 877.
 - serum—
 - anaphylaxis after using, (32) 373.
 - immunity studies, (36) 577.
 - precipitating, investigations, (31) 281.
 - precipitating, preparation, (27) 182.
 - preparation, (36) 779.
 - purification, (39) 183.
 - review of literature, (40) 84.
 - valuation, (31) 82, 181.
 - spores—
 - destruction in hides, (31) 677; (33) 178; (35) 882.
 - disinfection in tannin effluent, (36) 180.
 - germination as affected by culture media, (26) 781.
 - longevity, (26) 781.
 - resistance to heat, (35) 487.
 - studies, (29) 478; (37) 78.
 - symptomatic, *see* Blackleg.
 - transmission, (26) 678; (39) 161.
 - transmission by—
 - biting flies, (31) 776.
 - carion feeders, (28) 678.
 - insects and animals, (30) 780.
 - stable flies, (28) 756; (29) 761; (32) 552.
 - treatment, (27) 182, 680; (29) 679; (35) 379, 784; (38) 483, 586; (40) 582.
 - unusual, in a mare, (26) 279.
- Anthrenus scrophulariae**, *see* Carpet-beetle.
- Anthrocephalus n.spp.**, descriptions, (28) 162.
- Anthrothrips**—
- dozieri n.sp., description, (40) 353.
 - floridensis n.sp., description, (37) 561.
 - North American species, (37) 561.
- Anthrus rubescens**, destruction of grain aphids by, (29) 453.
- Anthyllis cytoides**, analyses, (33) 466.
- Antigressin** serums, notes, (27) 883.
- Antianaphylaxis**—
- nature of, (30) 478.
 - studies, (37) 178.
- Antianthrax** serum, preparation, (29) 378; (30) 280.
- Antibodies**—
- and antigens, coexistence in the body, (35) 781.
 - detection, (29) 881, 882.
 - detection in blood of horses immunized with voldagsen bacilli, (30) 685.
 - fate in precipitin reaction, (34) 877.
 - fixation in vitro, (26) 579.
 - formation—
 - as affected by exudate leucocytes, (26) 278.
 - during preparation of serums, (29) 581.
 - in blood of immunized horses, (28) 779.
 - review of investigations, (28) 180.
 - hemolytic, preparation and action in vitro, (40) 380.
 - in Dorset-Niles serum, (29) 82.
 - in rats fed pure vegetable proteins, (32) 875.
 - in tuberculosis and John's disease, (31) 882.
 - liberation on injection of foreign protein, (40) 180.
 - local production of, (26) 579.
 - nature, (37) 76.
 - nonspecific, passive transference, (36) 878.
 - notes, (26) 676.
 - of spores, (36) 380.
 - of the lymph, origin, (35) 73.
 - preparation, (32) 78.
 - production, effect of arsphenamin and mercuric chlorid on, (40) 287.
 - relation to antigen within the cell, (38) 78.
 - specific, in blood serum of tuberculous subjects, (27) 481.
 - studies, (36) 80, 576.
 - transmission from mother to fetus, (38) 284.
 - tubercular—
 - inhibition reaction of, (31) 481.
 - notes, (29) 583.
 - production in bovines, (30) 582.
 - production in sound animals, (28) 585.
 - studies, (35) 784.
- Anticalf dysentery** serum, valuation, (28) 782.
- Anticarsia**—
- caterpillar on velvet beans, (33) 58.

Anticarsia—Continued.

- gemmae—
 - in West Indies, (38) 58.
 - life history, (36) 459.
 - notes, (31) 752.
 - studies, (34) 358; (35) 852, 854; (39) 461.
- Anticoli serum, Jensen's studies, (32) 582.
- Anticyclones**—
 - in United States, (33) 807; (36) 718.
 - nature, (32) 810.
- Anticyclonic stratus**, formation, (38) 511.
- Antiemulsin**, synthetic properties, (27) 612.
- Antierysipelas** serum, preparation, (29) 378.
- Antiferments, bacterial**—
 - nature of, (35) 382.
 - studies, (32) 678.
- Antiformin**—
 - action on tubercle bacilli, (31) 881.
 - diagnostic value, (29) 285.
- Antigaster mirabilis**, notes, (31) 650.
- Antigen**—
 - and antibody, coexistence in serum, (34) 779; (37) 877; (39) 584.
 - and antiserum, simultaneous injections, (36) 677.
 - dose and antibody production, relation, (38) 584.
 - intracutaneous absorption, (38) 482.
 - precipitin, production from bacteria, (38) 483.
 - protein-free, injection of rabbits with, (27) 382.
 - relation to antibody within the cell, (38) 78.
 - serum mixture, injection of rabbits with, (27) 382.
 - synthetic, for meiotagmin reaction, (31) 178.
- Antigenic**—
 - action of separated horse serum proteins, (36) 877.
 - properties of β -nucleoproteins, (37) 77.
- Antigens**—
 - bacterial, dried, (40) 678.
 - bacterial, preparation, (40) 478.
 - containing cholesterol, use, (32) 272.
 - detection, (29) 881, 882.
 - detection and concentration, (34) 579.
 - excretion, (34) 579.
 - from serum-grown bacteria, nonspecific reactions, (35) 679.
 - in cultures of tubercle bacilli, (31) 778.
 - notes, (26) 676.
 - plant, hemagglutinating and precipitating capacity, (26) 607.
 - preparation, (32) 78.
 - preservation, (26) 83.
 - tuberculous, (40) 481, 886, 887.
 - tuberculous—
 - inhibition reaction of, (31) 481.
 - notes, (29) 583.
 - preparation, (26) 783.
 - visible detection, (26) 579.
- Antigeny**, problem in, (27) 655.
- Antiglanders** serum, preparation, (36) 679.
- Antihematoxins**, bacterial, notes, (26) 676; (32) 78.
- Antihemolysin** in animal serums, (28) 179.
- Antihog-cholera** serum—
 - bacterial studies, (32) 271.
 - distribution, (26) 888; (29) 888.
 - efficiency, (28) 587.
 - keeping quality, (30) 185.
 - notes, (31) 781.
 - preparation, (32) 83, 277, 378, 480, 676.
 - preparation and standardization, (31) 885.
 - preparation and use, (31) 86.
 - production and distribution in California, (30) 484.
 - production and use, (29) 888.
 - standardization, (32) 880.
 - use, (29) 482; (32) 83, 277.
- Antihog erysipelas** serum, preparation, (28) 381.
- Antiketogenesis**, theory of, (34) 462.
- Antimony**—
 - detection in water, (34) 410.
 - effect on geese, (28) 73.
 - effect on respiration in plants, (33) 30.
 - use against spirochete and trypanosome diseases, (31) 284.
- Antineuritic**—
 - substance from egg yolk, (37) 308.
 - substances, isomerism in, (36) 314.
- Antineuritis** bases, vegetable, relation to beri-beri, (28) 67.
- Antipsopic** test, diagnostic value, (26) 283.

- Antioxidase—
 notes, (37) 203.
 of tomato plants, (34) 33.
- Antiperistalsis, relation to bacteria in alimentary tract, (28) 882.
- Antiphenol serum, tests, (35) 279.
- Antiphymatol—
 tests, (28) 680.
 use against tuberculosis, (31) 779; (32) 183; (33) 284, 481.
- Antipolynuritic substances from carrots and yeast, (40) 174.
- Antipyrin—
 determination, (29) 800.
 periodids of, (36) 313.
- Antirabic—
 inoculations, local reaction in, (26) 177.
 vaccine, preparation, (26) 782.
- Antiricin, chemical nature, (30) 204.
- Antirinderpest serum—
 preparation, (28) 782.
 production, (27) 380.
 tests, (27) 380; (29) 285.
- Antirrhinum majus—
 factor coupling in, (28) 531.
 flower pigments, (31) 224; (32) 202, 203, 220.
- Antirrhinum spp., hybridization experiments, (30) 330.
- Antirrhinums, culture experiments, (31) 340.
- Antiscorbutic—
 factor in lemon juice, (40) 364, 869.
 factor, studies, (40) 269, 272.
 property of vegetables, (40) 172, 762.
 substance—
 distribution in foodstuffs, (40) 868.
 in sprouted grains, (40) 565, 869.
- Antiscorbutics, rôle in the diet, (40) 70.
- Antiseptic—
 properties of some organic compounds, (39) 412.
 solution of crystal violet and brilliant green, (40) 255.
 solutions, bleaching powder for, (40) 414.
 use of brilliant green for, (40) 581.
- Antiseptics—
 action—
 of, (29) 802.
 on *Bacillus welchii* toxin, (39) 185.
 on necrotic tissue, (38) 685.
 on pus and pure cultures, (36) 479.
 bactericidal properties, (34) 675.
 chlorinated, alkalinity and acidimetry of, (39) 506.
 comparative study, (37) 176.
 effect on—
 action of maltase, (28) 503.
 concentration of soil solution, (37) 719.
 crop growth, (31) 27.
 soils, (35) 515.
 efficacy, studies, (39) 80.
 handbook, (39) 184.
 mixtures of, action, (40) 581.
 new, (38) 283, 782; (39) 80, 680, 885.
 oil, germicidal power, (40) 882.
 papers on, (40) 779.
 soil, tests, (28) 538.
 sterilization of soils by, (32) 816.
 toxicity, (39) 586.
 use in food materials, (26) 564.
 volatile—
 effect on soil bacteria, (31) 516.
 effect on soils, (37) 519.
- Antiserum—
 specific, for infections of unknown cause, (40) 678.
 testicular, toxicity, (28) 676.
- Antisheep—
 amboceptor, production, (35) 574.
 hemolytic amboceptor, preservation, (38) 181.
- Antistrangles vaccine, use, (30) 180.
- Antistreptococcus serum—
 curative power, (31) 479.
 studies, (26) 579.
 tests, (32) 272.
- Antitetanic serum, efficacy of, (31) 379.
- Antithorombin, rôle in coagulation of blood, (26) 580.
- Antitoxic—
 rôle of oxyhydriase, (40) 580.
 serum, concentration, (37) 376; (40) 287, 288.
 serum production, (40) 580.
 substances, studies, (40) 179.
- Antitoxin—
 absorption as affected by protein concentration, (32) 372.
 concentration, (36) 178, 179; (39) 487.
 dosage, relation to serum sensitization, (32) 372.
 in milk of immunized sheep, (27) 680.
 oral administration of, (26) 83.
 preparation, (26) 374.
 preparation and standardization, (33) 280.
 studies, (39) 489.
- Antituberculin, notes, (26) 379.
- Antituberculosis—
 immunity, notes, (26) 379.
 serum, notes, (27) 580.
- Antler moth, notes, (38) 361.
- Antorgan as a wood preservative, (30) 647.
- Ants—
 acacia, of Central America, (31) 452.
 acrobat, notes, (31) 853; (35) 254.
 agricultural or hillock, studies, (27) 263.
 animals associated with, (26) 348.
- Argentina—
 as an orchard pest, (37) 568.
 control, (36) 60; (39) 264.
 distribution and control, (35) 761.
 in California, (26) 254; (29) 654.
 citrus groves, (39) 155, 156.
 Silesia, (37) 766.
 Texas, (31) 256.
 natural enemies, (40) 65.
 notes, (29) 654; (34) 158; (40) 655.
 studies, (29) 563.
- as carriers of—
 blister rust, (39) 248.
 cholera vibrios, (31) 752.
 pathogenic micro-organisms, (31) 849.
- as fruit tree pests, (32) 551.
- behavior toward larvae of *Lycæna* spp., (27) 258.
- black garden, notes, (27) 54.
- cacao, studies, (39) 156.
- combating, (39) 59.
- common house, trail formation and orientation, (29) 860.
- control in dwellings, (36) 555.
- cornfield—
 capture of living insects by, (33) 258.
 life history, (29) 860.
- cutting or parasol, studies, (27) 263.
- destruction—
 by dynamite, (34) 125.
 of pigs by, (26) 483.
- destructive to—
 bagworms, (27) 558.
 fly larvae, (28) 255.
- distribution of pear blight by, (33) 149.
- economic importance, (40) 547.
- feeding habits, (31) 458.
- fire, notes, (28) 158, 853.
- fungus-growing—
 in Louisiana, (38) 564.
 of Texas, (26) 658.
 remedies, (35) 761.
- Gramang, economic importance, (8) 364.
- guamá, remedies, (31) 637.
- harvester, notes, (29) 453.
- harvester, remedies, (32) 549; (33) 57; (35) 551; (39) 760.
- house, eradication, (39) 761.
- house, remedies, (35) 555.
- injurious to—
 cacao, (27) 53.
 coffee, (27) 856; (29) 652.
 okra, (29) 653.
 tobacco, (30) 759.
- larvae, studies, (40) 553.
- leaf-cutting, control in Argentina, (26) 452.
- little brown, destructive to flies, (30) 554.
- lycenid reared by, (31) 352.
- notes, (40) 259.
- of Great Britain, guide, (35) 262.
- Guam, (27) 264.
- Haiti, (34) 556.
- Hawaii, (30) 759; (34) 59; (35) 557.
- Illinois, list, (28) 758.
- Indiana, list, (39) 768.
- South Carolina, (38) 768.
- Wisconsin, list, (39) 869.
- orientation of, (33) 563.
- papers on, (27) 656.

Ants—Continued.

- pavement, as a pest of cold-frame and green-house crops, (34) 657.
- predacious on alfalfa caterpillar, (32) 58.
- protecting acacia trees in Central America, (37) 568.
- queen, founding of colonies by, (31) 452.
- remedies, (31) 155; (32) 650; (38) 47.
- removal of onion seeds by, (35) 365.
- studies, (28) 562.
- transmission of anthrax by, (26) 678.
- weather-proof bands for, (37) 59.
- white, *see* Termites.
- Yakman, as enemy of bees, (40) 358.
- yellow field, notes, (34) 752.

Anuraphis spp., *see* Aphis.

Anystis agilis, notes, (27) 861.

Aonidia oleae n.sp., description, (32) 449.

Aonidiella—

aurantii, *see* Orange scale.

inopinata n.sp., description, (33) 653.

Aorta in warm-blooded animals, size of, (28) 375.

Apache National Forest, composite type on, (29) 43.

Apamea basilinea, notes, (36) 552.

Apanteles—

caja, notes, (31) 251.

canarsiae, notes, (36) 155.

congregatus, notes, (30) 59.

diacrisiae n.sp., description, (38) 165.

glomeratus—

notes, (38) 768.

oviposition, (40) 263.

studies, (27) 459.

hyphantriae, notes, (27) 261.

impurus, notes, (29) 562.

in Nova Scotia, (33) 746.

lacteicolor—

bionomics, (39) 661.

dispersion in New England, (33) 254.

in Maine, (37) 459.

notes, (27) 456.

lateralis, parasitic on bee moth, (26) 657.

militaris—

biology, (34) 455.

effect on army worm larvae, (35) 553.

n.sp., notes, (27) 159; (28) 752.

n.spp., descriptions, (26) 352; (29) 563; (30) 255; (34) 456.

(Protopanteles) flavicombe, parasitic on alfalfa caterpillar, (32) 58.

sp., notes, (29) 256; (36) 655.

spp., parasitic on gipsy moth, (31) 652.

Apantesis argae, notes, (32) 753.

Apate francisci, notes, (36) 355.

Apate populi, notes, (28) 155.

Apateticus spp., life histories, (35) 658.

Apatite—

action of fertilizer salts on, (35) 326.

decomposition by soil bacteria and yeast, (31) 421.

deposits in Chile, (32) 723.

Apechoneura, studies, (34) 758.

Apemea (Hadena) didyma (oculea), notes, (27) 552.

Apentellicus kotinskyi n.sp., notes, (29) 253.

Apera spica venti, germination as affected by light, (30) 531.

Apes—

infection with avian tuberculosis, (26) 583.

morphology of blood, (28) 777.

Aphaenogaster barbara, notes, (27) 54.

Aphaereta—

sarcophagae n.sp., description, (35) 262.

sp., parasitic on locusts, (32) 60.

Aphalara n.sp., description, (40) 354.

Aphanomyces laevis, notes, (27) 544, 651, 728; (29) 647.

Aphanurus bodkini n.sp., description, (31) 459.

Aphelchus—

armerodis, notes, (34) 841.

n.spp., descriptions, (31) 56.

olesistus, description, (36) 52.

olesistus, notes, (28) 854.

ormerodis, notes, (37) 246.

ritsemabosi, notes, (34) 249.

spp., parasitism, (30) 648.

Aphelininae, synopsis, (30) 161.

Aphelinoidea semifuscipennis, notes, (31) 752.

Aphelinus—

chrysomphali, notes, (38) 467.

diaspidis, parasitic on orange scale, (26) 554.

Aphelinus—Continued.

European species, (30) 754.

fuscipennis, notes, (27) 556; (28) 159; (29) 758.

lapisigni n.sp., description, (37) 766.

lapisigni n.sp., feeding on juices of its host, (37) 856.

mytilaspidis, studies, (37) 59.

spp., notes, (27) 152; (31) 356.

Aphelocoma cyanotis and its allies, (38) 556.

Aphelopus—

dikraneuri n.sp., studies, (40) 265.

thelae n.sp., description, (39) 662.

Aphidencyrus aspidioti—

britannica n.var., description, (35) 365.

n.sp., description, (35) 263.

notes, (38) 565.

Aphididae—

Cyrus Thomas collection, (30) 754.

habits, (32) 849.

infesting sage brush in Oregon, (34) 357.

intermediates in, (35) 256.

leaf feeding, on pines, (36) 459.

notes, (38) 357.

of Africa, (39) 559.

California, (26) 149, 755; (27) 859; (28) 452;

(35) 56; (38) 260.

California, host index, (26) 149; (28) 556.

Indiana, (28) 554.

Italy, (38) 460.

Japan, (38) 463; (40) 262.

Java, (37) 850.

Lahore, (40) 650.

Nebraska, (26) 655.

Portugal, (33) 748.

on apples in Great Britain, (36) 253.

sensory structures, (37) 850.

Aphidinae of Japan, new, (40) 60.

Aphidius—

brasilensis n.sp., description, (39) 566.

brassicae, notes, (26) 149.

crepidis, notes, (31) 757.

nigripes, parasitic on grain louse, (26) 857.

obsoletus n.sp., description, (30) 758.

testaceipes—

destructive to citrus plant lice, (26) 755.

notes, (27) 859.

Aphidoletes meridionalis, studies, (35) 855.

Aphidolysin in plant lice, (40) 650.

Aphids—

alternation of generations, (28) 655.

alternation of hosts, (39) 464.

as fire blight carriers, (39) 251.

cat-tail as a summer host, (37) 461.

control—

by lady beetles, (34) 555; (39) 663.

in gardens, (39) 657.

dissemination of lettuce bacterial rot by, (31) 747.

ecology, problems in, (35) 658.

endoparasitism in, (37) 54.

food plants of, (30) 854; (31) 157; (39) 657.

hemolysin in, (40) 650.

injurious in Georgia, (38) 256.

injurious to peas, (31) 452.

new or little known, of eastern United States, (37) 850.

new species from California, (39) 658.

newly hatched, remedies, (35) 757.

nomenclature, (38) 462.

notes, (28) 60, 248; (29) 654, 854; (31) 155; (37) 258.

of British Columbia, (35) 755.

Colorado, (33) 857.

Oregon, (34) 356.

papers on, (40) 259.

relation to fire blight, (34) 452; (37) 151, 157.

remedies, (31) 848; (37) 254, 256, 358; (38) 47, 56, 159.

tobacco treatment, (39) 461.

wing development, (40) 456.

Aphiochaeta—

ferruginea, relation to Asiatic cholera, (35) 258.

juli, habits, (29) 457.

perdita, parasitic on alfalfa caterpillar, (32) 58.

xantina, notes, (36) 754.

Aphis—

abbreviata n.sp., description, (28) 60.

abietina—

notes, (32) 57, 448.

outbreak in England and Ireland, (29) 757.

Aphis—Continued.

- avenae—
 breeding experiments, (36) 253.
 in Maryland, (38) 154.
 injurious to apples, (33) 253.
 injurious to cereals, (28) 653.
 notes, (31) 753; (32) 755; (36) 458; (40) 648.
 remedies, (38) 561.
 bakeri—see also Apple aphid.
 allied species, (39) 465.
 bituberculata n.sp., description, (31) 850.
 brassicae, see Cabbage aphid.
 brevis, studies, (32) 755.
 brevisiphona n.sp., notes, (29) 454.
 cerasi, notes, (32) 651.
 chenopodii, new genus for, (40) 650.
 circzeandis, identity, (40) 754.
 cookii n.sp., description, (26) 755.
 crataegi, injurious to apples, (26) 247.
 eggs, destruction with hydrocyanic acid gas, (36) 551.
 euonymi—
 and A. papaveris, identity, (30) 252.
 hymenopterous parasites of, (31) 757.
 studies, (31) 652, 754.
 fitchii, notes, (33) 554.
 foot in horses, notes, (26) 888.
 forbesi—
 notes, (29) 653; (33) 554.
 studies, (38) 357.
 gossypii—see also Cotton aphid and Melon aphid.
 notes, (26) 755; (27) 155.
 synonym of, (40) 754.
 wing development, (40) 456.
 green, notes, (36) 457.
 grossulariae, notes, (27) 753; (30) 53.
 immunity of teosinte-corn hybrids, (38) 561.
 maidi-radici, see Corn root aphid.
 maidis, notes, (28) 158; (29) 252.
 malifoliae—
 in Nova Scotia, (38) 156.
 key for stem mothers, (39) 360.
 studies, (36) 357.
 n.sp., description, (31) 157.
 neo-mexicana pacifica, n.var., description, (37) 562.
 papaveris in northern France, (30) 251.
 persicae-niger, see Peach aphid, black.
 pisi, see Macrosiphum pisi.
 pomi, see Apple aphid, green.
 pomi-mali, see Apple aphid.
 pomonella n.sp., description, (36) 253.
 pruni, remedies, (33) 555.
 prunifoliae, key for stem mothers, (39) 360.
 pseudoavenae n.sp., description, (39) 62.
 pseudobrassicae—
 n.sp., description, (31) 754.
 notes, (37) 254; (39) 762.
 studies, (34) 452; (35) 756.
 pulverulens n.sp., description, (26) 149.
 rosy—
 control, (40) 754.
 in Maryland, (38) 154.
 in Nova Scotia, (38) 156.
 notes, (40) 648.
 remedies, (39) 761.
 studies, (40) 649.
 rumicis—
 control, (29) 454; (34) 555, 755; (39) 256.
 host plants and habits, (32) 849.
 host plants of, (33) 557.
 notes, (28) 556; (35) 54.
 on artichoke, (40) 58.
 saliceti and allied species, (39) 657.
 scalliae n.sp., notes, (31) 848.
 sensoriata n.sp., notes, (39) 465.
 setariae, notes, (33) 452.
 sorbi—
 alternate or summer host plants, (35) 462.
 in Maryland, (38) 154.
 life history and remedies, (30) 251.
 notes, (33) 253; (35) 853; (36) 357; (40) 648.
 predatory enemy of, (30) 459.
 remedies, (33) 253; (38) 561; (39) 760, 761.
 studies, (40) 649.
 sorghi, notes, (27) 53.
 spp., injurious to cotton, (27) 454.
 spp., notes, (26) 60, 654; (28) 252, 254, 655, 854; (29) 454; (31) 755.

Aphis—Continued.

- spp. on Rosaceae, (32) 848.
 theobaldi n.sp., description, (39) 657.
 woolly—see also Apple aphid, woolly.
 as a pear pest, (34) 357.
 control, (40) 258.
 identity, (34) 854.
 in core of apples, (30) 156.
 migration from elm to mountain ash, (28) 251.
 mouth parts and suction mechanism in, (34) 653.
 notes, (27) 859; (29) 558; (35) 54, 552; (40) 256, 547.
 of elm, (30) 854.
 of elm and Juneberry, (34) 161.
 relation to Nectria ditissima, (39) 150.
 structure and biology, (28) 856.
 studies, (32) 848; (34) 62; (36) 755; (39) 253; (40) 165.
 yellow, attacking sugar cane, (38) 762.
 Aphrizidae of North and Middle America, (41) 547.
 Aphrophora—
 parallela, life history, (36) 458.
 parallela, notes, (37) 255.
 spumaria, notes, (30) 356.
 Aphthomonas infestans, description, (36) 278.
 Aphthous fever, see Foot-and-mouth disease.
 Aphycoides io, notes, (36) 556.
 Aphycus—
 flavus, parasitic on black scale, (26) 556.
 hesperidum n.sp., description, (38) 467.
 immaculatus, parasitic on orange scale, (26) 554.
 melanostomatus, studies, (40) 651.
 n.spp., descriptions, (35) 857.
 spp., notes (29) 654; (33) 555.
 terryi n.sp., notes (30) 661.
 Aphyllantes monspeliensis, analyses, (33) 466.
 Apiaries, inspection—
 in Connecticut, (26) 855; (28) 553; (30) 654; (33) 57; (35) 53; (37) 254; (39) 760.
 Colorado, (30) 249; (31) 254; (34) 651.
 Indiana, (28) 555; (35) 461; (38) 556.
 Iowa, (37) 467.
 Kansas, (33) 153; (37) 357.
 Massachusetts, (27) 359; (32) 556; (35) 662; (37) 855.
 Michigan, (27) 767.
 Ontario, (27) 458.
 Pennsylvania, (37) 459; (39) 869.
 Rhode Island, (27) 857.
 Wisconsin, (37) 263; (38) 155.
 law in Tennessee, (27) 756.
 record system for, (33) 862.
 Apiculture, see Beekeeping.
 Apiochaeta albidihalteris, notes, (27) 657.
 Apion—
 hibisci, studies, (40) 754.
 spp. injurious to alfalfa, (33) 555.
 spp., notes, (31) 848.
 xanthostylum, notes, (28) 555.
 Apioninae, notes, (27) 863.
 Apiospora camptospora, notes, (38) 550.
 Apiosporium oleae, parasitic on olive scale, (26) 655.
 Apis—
 fasciata, bionomics, (38) 264.
 indica, domestication, (37) 855.
 mellifera, see Bees.
 Aplanobacter—
 agropyri—
 n.sp., description, (36) 647.
 occurrence in Montana, (38) 249.
 michiganense, description, (31) 745.
 rathayi—
 n.sp., description, (30) 539; (31) 745.
 notes, (34) 349.
 stewarti n.comb., studies, (40) 846.
 Apodontia, revision, (39) 759.
 Aplopappus ciliatus, occurrence of barium in (26) 432.
 Aploparksis fuligulosa n.sp., description, (26) 561.
 Apluda mutica, notes, (26) 361.
 Apocellus sphaericollis, studies, (33) 563.
 Apocynum, rubber from, (30) 614.
 Apodemus sylvaticus, notes, (37) 156.
 Apomecyna binubila, notes, (27) 53; (32) 347.
 Apophyllite—
 extraction of potash from, (27) 323.
 fertilizing value, (27) 725.

Apoplexy—

- in winter-fed lambs, (26) 368.
- parturient, *see* Milk fever.

Aporia crataegi, notes, (33) 652.

Aporetocoda chlorotica, carbon dioxid exhalation of, (26) 619.

Aposphaeria—

- pomi, notes, (26) 449.
- ulei, notes, (37) 253.

Apparatus—

- absorption, (40) 308.
- automatic burette, (40) 505.
- condensing, (40) 308, 709.
- digestion, (40) 410.
- distillation, (40) 709.
- extraction, (40) 806.
- filtration, (40) 409.
- for ammonia—
 - distillation, (40) 709, 806.
 - oxidation, (40) 815.
- for analysis of gases, (40) 111.
- for determining—
 - nitrites and nitrites, (40) 309.
 - urea in blood, (40) 207.
 - water in food materials, (40) 204.
- for distributing Dakin's solution, (40) 12.
- filling and inoculating agar plates, (40) 805.
- measuring leather, (40) 208.
- rapid evaporation, (40) 505.
- serum distribution, (40) 581.
- tubing culture media, (40) 12.
- glass safety valve, (40) 709.
- laboratory, new or modified, (39) 9, 414, 502, 503, 505, 611, 713, 714, 804.
- mechanical pipette, (40) 806.
- nitrogen, all-glass, (40) 600, 806.
- osmotic pressure, description, (40) 801.
- respiration, portable, (40) 465.
- special stopcock, (40) 202.

Appetite—

- as affected by ventilation, (33) 664.
- studies, (37) 166.

Apple—

- Alternaria rot, Longyear's, (38) 453.
- anthracnose—
 - description and treatment, (27) 249.
 - notes, (31) 53; (33) 98; (34) 95, 542.
 - studies, (29) 153.
- aphis—
 - and Aphis sorbi, remedies, (39) 760.
 - and red bugs, notes, (34) 160.
 - banded, remedies, (36) 857.
 - biology of, (31) 250.
 - brown, notes, (35) 253.
 - control, (40) 162, 163, 549, 649, 754.
 - correct name, (38) 462.
 - distribution of pear blight by, (33) 149.
 - green, notes, (29) 353; (35) 657.
 - green, occurrence of an intermediate in, (33) 748.
 - green, remedies, (33) 58, 557.
 - in Great Britain, (36) 253.
 - in Maryland, (38) 154.
 - key for stem mothers, (39) 360.
 - life histories and habits, (35) 462.
 - migratory, notes, (33) 554.
 - notes, (27) 53; (29) 353, 652; (33) 253; (36) 854; (38) 358; (40) 647, 648, 649, 650.
 - purple, remedies, (33) 557.
 - remedies, (29) 356; (30) 55, 852; (32) 449, 536; (33) 253; (34) 147; (35) 456, 757, 838; (36) 855; (37) 54, 156; (38) 257, 561, 857; (39) 345; (40) 161.
- aphis, rosy—*see also* Aphis, rosy.
 - alternate hosts, (39) 464.
 - life history and remedies, (30) 251.
 - predatory enemy of, (30) 459.
 - studies, (36) 356.
- aphis, studies, (32) 755; (34) 754; (37) 561; (40) 354, 649.
- aphis, woolly—*see also* Aphis, woolly.
 - and elm cluster louse, identity, (34) 357.
 - and Schizoneura americana, relationship, (28) 251.
 - control, (26) 561; (33) 59; (40) 258.
 - destruction by vegetable parasites, (28) 354.
 - in core of apples, (30) 156.
 - life history and remedies, (28) 251.

Apple—Continued.

aphis, woolly—continued.

- notes, (26) 753, 856; (27) 353, 455, 555, 859; (29) 353, 453, 654; (34) 161; (35) 253, 853; (36) 253; (39) 258, 464, 864; (40) 547.
- on Rosaceae, (32) 845.
- structure and biology, (28) 856.
- studies, (30) 548; (32) 848; (38) 464; (39) 258; (40) 165.

bark—

- canker, studies, (38) 453.
- disease, studies, (38) 251.
- healthy and diseased, oxidation in, (34) 136.
- spot, brown, (39) 251.

base as a jellying agent, (32) 162.

bitter pit—

- cause, (26) 55; (27) 749.
- cause and development, (32) 751.
- notes, (38) 646.
- relation to irrigation, (36) 50.
- studies, (29) 246; (31) 244; (33) 348, 852; (35) 456, 457; (37) 455; (38) 352.
- treatment, (37) 151.

bitter rot—

- control, (39) 251.
- enzym activity in, (29) 648.
- fungus, utilization of pentoses by, (34) 351.
- notes, (27) 546.
- studies, (33) 148; (39) 551.
- treatment, (27) 153; (30) 650.

black root rot—

- description, (36) 147.
- studies, (37) 456, 754.

black rot—

- notes, (39) 850.
- studies, (36) 148, 750; (38) 649.
- treatment, (30) 650.

black spot—

- canker, notes, (31) 53.
- notes, (30) 541; (40) 748, 749.
- treatment, (40) 749.

blight—

- description and treatment, (31) 53.
- notes, (31) 644, 843; (33) 534; (34) 648.
- resistance to, (38) 350.
- resistant stocks, (39) 864.
- studies, (38) 650.

blister canker—

- description and treatment, (27) 445.
- notes, (27) 749; (37) 151.
- studies, (39) 53.
- treatment, (37) 51.

blister—

- disease, notes, (34) 543.
- spot, notes, (36) 148.
- spot, studies, (38) 251.

blossom—

- blight, notes, (31) 345.
- morphology, (39) 138.
- weevil, parasite of, (40) 65.
- wilt and canker, studies, (38) 453.
- wilt, notes, (40) 850.

blotch—

- control, (40) 639.
- notes, (28) 148.
- studies, (37) 654.
- treatment, (31) 53, 439; (38) 551.

branch blister, notes, (32) 344; (37) 842.

breeding in Canada, (28) 540.

brown rot—

- notes, (34) 241; (37) 457.
- studies, (31) 749; (35) 248.
- treatment, (32) 148.

bud—

- development as affected by summer pruning, (36) 239.
- disease, notes, (34) 49.
- formation as affected by soil management, (40) 148.
- moth, eye-spotted, remedies, (39) 659.
- moth, notes, (28) 752.
- selection, (37) 249; (39) 40, 844.

buds—

- analyses, (31) 836.
- new disease of, (30) 352.
- resistance to frost, (30) 839.

bug, green—

- remedies, (40) 354.
- studies, (36) 457; (37) 462.

Apple—Continued.

- canker—
 - and blossom wilt, studies, (38) 453.
 - behavior in two grafts on same stock, (37) 250.
 - description and treatment, (29) 752.
 - diseases, treatment, (33) 248.
 - European, in Quebec, (32) 544.
 - in Ontario County, (26) 541.
 - notes, (26) 446; (27) 546; (28) 446; (29) 793; (32) 445, 547; (33) 347; (36) 541.
 - studies, (30) 651; (34) 744; (35) 653.
 - transmission by tree crickets, (34) 653.
 - treatment, (35) 848; (37) 754; (38) 639; (40) 341.
- capsids—
 - remedies, (39) 763.
 - studies, (40) 59, 60.
- caterpillar—
 - red-humped, notes, (28) 158; (30) 157; (39) 761.
 - yellow-necked, notes, (36) 358.
- chlorosis, treatment, (30) 749.
- cider as a source of alcohol, (35) 113.
- cider, preparation, (33) 816.
- collar blight, notes, (31) 346.
- collar blight, studies, (34) 247; (35) 548.
- collar rot, studies, (34) 154, 156.
- cork, studies, (37) 350.
- cracking disease—
 - notes, (32) 344.
 - studies, (39) 149.
- cricket canker, (35) 547.
- crown gall—
 - studies, (35) 35; (39) 856.
 - varietal relations, (37) 554.
- curculio—
 - notes, (26) 759.
 - remedies, (34) 147; (37) 242; (39) 348.
- die-back, notes, (28) 54; (32) 644.
- die-back, studies, (37) 554.
- disease in New Zealand, (35) 456.
- disease, notes, (31) 539.
- diseases—
 - and pests, treatment, (38) 843.
 - descriptions, (31) 449.
 - in Indiana, (38) 251.
 - Iowa, (29) 445.
 - New South Wales, (34) 247.
 - New York, (40) 249, 251.
 - New Zealand, (38) 452.
 - Pennsylvania, (34) 646; (35) 351.
 - Tasmania, (36) 846.
- inoculation experiments, (27) 651.
- manual, (30) 642.
- notes, (26) 55, 742, 840, 844; (27) 241, 349, 353; (28) 544, 555, 747; (29) 146, 242, 353; (30) 245; (31) 641, 644; (32) 544, 641; (33) 447, 741, 840; (37) 51; (38) 50, 550; (39) 452; (40) 53.
- spray calendar for, (26) 539.
- studies, (26) 449; (28) 240; (29) 649; (32) 750; (33) 544.
- treatment, (26) 48; (27) 39, 849, 855; (28) 58; (31) 151, 335; (32) 751; (33) 45, 349; (34) 747; (35) 752; (37) 51.
- drop caused by lime-sulphur, (40) 57.
- drought spot, studies, (37) 350.
- ermine moth—
 - identity and distribution, (38) 860.
 - notes, (29) 252.
 - studies, (28) 557.
- eye rot, notes, (35) 151.
- fire blight—
 - description, (35) 848.
 - dissemination by bees, (35) 662.
 - notes, (29) 848; (31) 749; (32) 844; (33) 53.
 - relation to fertilizers, (28) 144.
 - studies, (29) 348.
- flea weevil—
 - notes, (28) 156; (34) 254.
 - remedies, (31) 456.
- flour, studies, (40) 762.
- flower wilt and young fruit rot, (36) 148.
- flowers—
 - and fruits, abscission, (37) 240.
 - polymorphism in, (28) 540.
- foliage—
 - diseases, investigations, (27) 152.
 - studies, (26) 407.
 - wind scorch of, (33) 148.

Apple—Continued.

- frog-eye leaf spot, studies, (29) 648; (35) 151.
- fruit buds—
 - development, (31) 335; (33) 838.
 - formation, (29) 437; (33) 44; (35) 499, 837; (39) 40, 42, 241, 346.
 - formation as affected by pruning, ringing, etc., (33) 735.
 - winter injuries, (28) 741; (29) 41.
- fruit—
 - miner, life history, (38) 261.
 - pit disease, notes, (35) 456.
 - rots, notes, (30) 147.
 - spot, notes, (28) 345, 849; (30) 541; (32) 51, 749; (34) 842, 846; (35) 848; (40) 844.
 - spot, studies, (27) 652; (33) 247.
 - spots and rots, studies, (35) 242.
 - spur system, (36) 239.
- gnarly disease, notes, (38) 453.
- grafts, comparative growth, (32) 635.
- heart rot, studies, (35) 653.
- hold-over blight, studies, (26) 646.
- industry—
 - in United States, (36) 536.
 - in Virginia, census, (40) 149.
- jelly, manufacture, (37) 15; (40) 414.
- jelly, preparation, (39) 808.
- Jonathan spot—
 - rot, notes, (29) 847, 848; (31) 748; (34) 157; (37) 754.
 - studies, (38) 353.
- juice—
 - analyses, (33) 240; (37) 502; (40) 764.
 - fermentation, (36) 801.
 - notes, (29) 116.
 - osmotic pressure, (28) 262.
 - physico-chemical constants of, (31) 427.
 - preservation by pressure, (32) 416.
 - studies, (29) 711.
- June drop, (38) 745.
- leaf—
 - blister mite, notes, (35) 263.
 - cast, notes, (38) 647.
 - crumpler, notes, (26) 856.
 - diseases, description, (35) 752.
 - dry spot, notes, (34) 842.
 - jassid, description, (40) 261.
 - miner, notes, (32) 651; (35) 253.
 - miner, unspotted tentiform, notes, (29) 655.
 - mining case bearer, notes, (38) 862.
 - mites, notes, (37) 570.
 - roller, notes, (36) 457, 855.
 - roller, remedies, (37) 54.
 - sawfly, notes, (30) 53.
 - scorch, notes, (29) 845; (40) 844.
 - scorch, studies, (38) 649.
 - sewer, studies, (36) 254.
 - sewer, notes, (38) 358.
- leaf spot—
 - description, (30) 50, 650.
 - in Indiana, (39) 52.
 - notes, (29) 748; (34) 54.
 - studies, (28) 548; (31) 150; (33) 247.
 - treatment, (27) 153; (30) 650.
- leaf trumpet miner, notes, (30) 657.
- leafhopper—
 - black, *see* *Idiocerus provancheri*.
 - life history and habits, (38) 858, 859; (39) 61.
 - notes, (26) 59; (27) 755, 858; (28) 752; (29) 354; (33) 352, 356.
 - on potato, (40) 353.
 - relation to fire blight, (36) 351.
- leaves—
 - as affected by *Gymnosporangium*, (26) 649; (30) 245.
 - diseased, respiration in, (32) 751.
 - infection by cedar rust, (29) 49, 647, 648.
 - infection by *Gymnosporangium macropus*, (29) 647.
- limb diseases, notes and treatment, (29) 49.
- maggot—
 - affecting blueberries, (32) 350; (33) 97; (34) 852.
 - biology and remedies, (29) 560.
 - control, (40) 163, 654.
 - in British Columbia, (37) 665; (40) 654.
 - in Nova Scotia, (35) 853.
 - in Ontario, (30) 53.
 - notes, (26) 753; (32) 448; (36) 856; (40) 57, 169, 654.

Apple—Continued.

- maggot—continued.
 - remedies, (31) 757; (33) 59; (35) 660; (38) 358.
 - studies, (32) 153; (38) 262.
- mildew—
 - in Sweden, (33) 846.
 - in Washington, (38) 47.
 - notes, (35) 650; (36) 541.
 - parasites of, (31) 544.
 - treatment, (26) 750; (34) 352; (38) 47; (40) 251, 849.
- moth, light brown, notes, (27) 57.
- mushroom root rot—
 - notes and treatment, (28) 748.
 - studies, (35) 242.
- orchards—
 - care and management, (29) 42, 353; (31) 45
 - cost of establishing, (36) 444.
 - cost of management, (31) 46; (32) 45.
 - cost of spraying, (35) 838.
 - cost to bearing age, (31) 45.
 - cover crops for, (35) 540.
 - culture experiments, (31) 141; (35) 644.
 - dusting, (35) 447.
 - eliminating unprofitable trees from, (32) 836.
 - establishment and care, (27) 241; (31) 45.
 - fertilizer experiments, (31) 141.
 - fertilizers for, (29) 148.
 - intercrops for, (35) 540.
 - management, (27) 241; (35) 143, 456.
 - mulching, (36) 396.
 - profits from, (31) 46; (33) 237; (35) 342, 447.
 - pruning, (29) 148.
 - renovating, illustrated lecture, (39) 93.
 - renovation and care, (32) 540.
 - soil management, (40) 742.
 - spraying, (26) 599.
 - spraying schedule for, (28) 48; (32) 536.
- orchards, survey in—
 - Berkeley County, West Virginia, (33) 839.
 - Mills County, Iowa, (32) 540; (33) 240.
 - Ontario County, New York, (26) 540.
- orchards, tillage v. sod mulch for, (31) 45, 337, 636; (35) 644.
- packing houses in Northwest, (37) 648.
- parings, analyses, (38) 626.
- Phytophthora rot, notes (35) 848.
- pollen—
 - effect on size and number of seeds, (31) 440.
 - germination, (35) 731.
 - vitality, (29) 326.
- pomace—
 - analyses, (26) 267, 714; (27) 775, 872; (32) 520.
 - feeding value, (26) 72; (28) 268; (32) 363; (35) 373; (39) 269.
 - fertilizing value, (34) 219.
- powdery mildew—
 - description and treatment, (31) 748.
 - in northwest, (39) 856.
 - notes, (28) 447.
 - studies, (33) 347.
 - treatment, (30) 640; (36) 350.
- psyllid, remedies, (31) 548.
- red bug—see *Lygidea mendax*.
- false, notes, (28) 752; (32) 550; (33) 58; (34) 158; (35) 54; (39) 258, 760.
- lined, notes, (34) 752.
- residues, storage and use, (30) 612.
- root borer, notes, (26) 353.
- root borer, studies, (32) 248.
- root rot in Virginia, (36) 351, 649.
- root rot, notes, (34) 49.
- rosette, notes, (36) 351.
- rot—
 - notes, (28) 241; (30) 349; (36) 47.
 - studies, (30) 542; (33) 348.
 - temperature relations, (36) 147, 649; (37) 754.
- rough bark, studies, (29) 154.
- rust—
 - control in West Virginia, (35) 657.
 - dusting experiments, (39) 54.
 - new, description, (31) 150, 345.
 - notes, (26) 52; (27) 546; (30) 542, 651; (32) 644; (35) 151; (39) 54.
 - relation to cedar apples, (28) 151.
 - studies, (34) 54, 154, 157, 444; (35) 49, 848; (39) 150.
 - treatment, (23) 748; (30) 450; (33) 247, 348.
- sawfly, notes, (29) 861.

Apple—Continued.

- scab—
 - control, (39) 251, 349, 352, 548, 552, 651.
 - description and treatment, (38) 550.
 - fungus, overwintering, (38) 151.
 - fungus, perithecia of, (31) 449; (35) 351.
 - infection, relation to height of fruit, (37) 51.
 - notes, (29) 247; (30) 147; (33) 647; (34) 247, 846; (36) 347, 647; (38) 546, 848, 852; (40) 748.
 - on twigs, (38) 251.
 - overwintering, (35) 753.
 - resistance to, (36) 649.
 - source of spring infection, (31) 151.
 - spraying v. dusting for, (31) 449.
 - studies, (27) 546; (30) 542, 848; (31) 645; (33) 148, 347; (37) 555.
 - treatment, (27) 153; (28) 448, 544; (29) 146; (30) 348, 840; (31) 346, 439; (32) 51, 540, 751; (33) 237, 247, 347, 648; (34) 747, 843; (35) 248, 249, 343, 447, 548, 549; (36) 50, 351; (37) 242, 655, 755; (38) 540; (40) 154, 341, 647.
- scald—
 - prevention by air movement, (39) 857.
 - studies, (36) 148; (38) 355; (39) 849.
- scions, tests, (28) 436.
- seed chalcid, notes, (27) 255; (28) 654; (38) 156.
- seed chalcid, studies, (36) 461.
- seeds—
 - agglutinating properties, (31) 774.
 - analyses, (34) 201.
 - composition, (27) 11.
 - oil from, (40) 511.
- silver leaf disease, notes, (26) 749; (35) 650.
- sirup, manufacture, (33) 209.
- skeletonizer in New York, (38) 60.
- skeletonizer, notes, (40) 648.
- skins—
 - ether extract of, (29) 461.
 - isolation of fat from, (29) 459.
 - yellow oil from, (31) 311.
- soft scald, studies, (39) 855.
- soils of Massachusetts and Connecticut, (32) 835.
- sooty—
 - blotch, notes, (29) 154; (35) 550.
 - blotch, treatment, (27) 747.
 - fungus, treatment, (28) 47.
- spot disease—
 - description, (36) 750.
 - notes, (28) 443.
- spot diseases—
 - development in storage, (38) 753.
 - relation to soil moisture, (38) 753.
 - studies, (35) 456; (38) 650.
- spot rots, studies, (33) 348.
- starch, studies, (31) 828.
- stems, variations in, (34) 144.
- stigmatose, studies, (33) 348, 349.
- stocks, effect on vintage, (33) 240; (35) 645.
- storage spot, notes, (32) 441.
- strainer, studies, (31) 852.
- sucker—
 - notes, (33) 652.
 - remedies, (31) 548; (33) 555, 857; (37) 761.
 - studies, (34) 451; (37) 761.
- tent caterpillar—
 - egg parasites, (36) 556.
 - life history and remedies, (29) 655.
 - notes, (28) 557; (30) 153, 654, 657; (34) 158.
 - remedies, (33) 59.
- tentiform leaf miner, unspotted, studies, (35) 359.
- tree borer—
 - control in West Virginia, (35) 657.
 - flat-headed, notes, (35) 656.
 - flat-headed on pecan, (38) 157, 762; (39) 557.
 - long-headed, notes, (33) 360.
 - notes, (26) 560; (29) 353.
 - round-headed, notes, (31) 249.
 - round-headed, remedies, (37) 161.
 - round-headed, studies, (39) 663, 808; (40) 654.
- tree trunks, introduction of solutions into, (36) 740.
- tree wounds, painting, (35) 446.
- trees—
 - dynamiting experiments, (35) 539.
 - potassium cyanid inoculation, (39) 225, 762.
 - ringing, (36) 536.
 - root systems, (35) 541.

Apple—Continued.

- trees—continued.
 - starch storage and migration in, (35) 645.
 - wood decay in, (34) 53.
- twig blight, prevalence in Ontario County, (26) 541.
- twig borer, notes, (30) 154.
- twig borer, studies, (31) 852.
- twigs, composition, (26) 407.
- water core—
 - cause, (26) 55.
 - notes, (28) 48, 549; (30) 749; (35) 40.
 - studies, (29) 848.
- weevil—
 - notes, (26) 759.
 - oviposition, (39) 363.
 - parasites of, (29) 562.
- wine, preparation, (27) 412.
- winter injury—
 - or die-back, studies, (35) 242.
 - to roots, (35) 542.
- wood-stainer, notes, (36) 258.
- worm, green, *see* Xylina sp.
- worms in Nova Scotia, (35) 853.

Apples—

- abscission of flowers and fruits, (38) 745.
- acidity, (32) 110; (37) 714.
- advertising, (36) 494.
- alternate cropping, (35) 37; (36) 140, 640.
- analyses, (26) 46.
- and pears, handbook, (26) 45.
- angle and size of shoots as affecting growth and productiveness, (39) 43.
- as affected by—
 - Bordeaux mixture, (27) 440.
 - formaldehyde gas, (30) 540.
 - imported western soil, (39) 40.
 - poisoning, (33) 329.
 - position in cluster, (40) 444.
 - removal of blooms, (38) 647.
 - spraying materials, (38) 156.
- as host of—
 - Archips argyrospila, (27) 160.
 - Fomes fomentarius, (32) 51.
- as source of alcohol, (36) 508.
- ash analyses, (29) 861.
- bark injury as affecting fruit-bud formation, (39) 43.
- bending dormant shoots, (39) 43.
- blooming dates in Utah, (39) 46.
- blooming period, (26) 440; (30) 642; (31) 533; (37) 744.
- blooming period as affected by sprays, (30) 641.
- breeding, (36) 444.
- breeding—
 - experiments, (27) 843; (32) 45, 438, 538; (34) 40, 634, 738; (36) 741; (37) 242; (38) 641; (39) 39, 346, 347, 542, 844; (40) 148, 341, 742.
 - for late blooming, (37) 743; (38) 639.
 - for South Dakota conditions, (39) 346.
 - in Canada, (38) 446.
 - in Idaho, (34) 42.
- calyx cup of, studies, (34) 64.
- cambial activity, (37) 128.
- canned, keeping in open tins, (39) 317.
- capsid bugs affecting, (32) 849.
- cider—
 - analyses and classification, (34) 233.
 - and vinegar qualities, (39) 316.
 - feeding value, (39) 269.
 - monograph, (28) 437.
 - use in cookery, (37) 669.
- classification, (35) 644.
- climatic adaptations of varieties, (26) 45.
- cold storage, (30) 41; (35) 447; (37) 833.
- color in, (35) 645.
- composition as affected by irrigation, (26) 336; (27) 10; (29) 237.
- conservation without use of sugar, cooking qualities of different varieties, (32) 560, 855.
- Coryneum-like structures on, (33) 545.
- cost of harvesting, (32) 541.
- cost of production, (26) 238; (29) 439; (33) 439, 840; (34) 233, 438, 638; (36) 841; (38) 844; (39) 140.

Apples—Continued.

- cost of production in Washington, (36) 443.
- crab, *see* Crab apples.
- critical months, (39) 811.
- cross pollination, (27) 598; (31) 440, 554; (36) 442, 742; (38) 345; (39) 645; (40) 149.
- crown gall affecting, (28) 447.
- cull, utilization, (33) 209.
- culture, (29) 745; (32) 45, 494, 751; (34) 833.
- culture—
 - experiments, (28) 144, 436; (29) 42; (34) 148, 217; (35) 37, 342, 447, 540; (36) 237, 240, 443; (38) 42, 242, 244, 345, 443, 641; (39) 242, 348; (40) 444, 837.
- in Alaska, (29) 742.
- Brittany, (33) 640.
- California, (32) 744.
- Canada, (36) 742.
- Delaware, (31) 236.
- Georgia, (27) 644; (33) 439.
- Indiana, (26) 742.
- Maine, (27) 644.
- Maryland, (30) 642.
- Massachusetts, (30) 739; (36) 742.
- Mesa County, (37) 241.
- Mississippi, (26) 742.
- New Jersey, (30) 739.
- New Mexico, (40) 18.
- New York, (35) 836.
- Northwest, (34) 638.
- Ontario, (26) 840.
- southern Texas, (32) 539.
- the Ozarks, (29) 237.
- Vermont, (26) 541.
- West Virginia, Jefferson Co., (33) 140.
- western Nebraska, (32) 233.
- on Long Island, (31) 45.
- under dry farming, (30) 435.
- custard, *see* Custard apples.
- cutinization of skins, (40) 246.
- defoliation experiments, (39) 42.
- description, methods and terms, (32) 744.
- destruction, (26) 334.
- disease resistance in, (29) 41; (40) 742.
- diseased, plaster cast of, (31) 748.
- districts and varieties, (36) 536.
- dried—
 - analyses, (30) 861.
 - examination, (36) 466.
 - microbiology, (34) 460.
 - preparation and use, (29) 462.
- drying, (27) 146; (35) 418; (37) 114, 509; (39) 16.
- Duchess, improved type, (38) 42.
- dusting—
 - and spraying costs, (36) 53.
 - and spraying experiments, (30) 840; (32) 836; (34) 738.
 - experiments, (38) 546; (39) 349; (40) 341, 445.
 - v. spraying, (36) 351; (38) 540.
- dwarf trees, (39) 347.
- dwarf v. standard (33) 639; (34) 344.
- effect of sprays on roots, (39) 40.
- effect on composition of urine, (31) 761.
- Emponsea unicolor on, (40) 57.
- enzymes of, (39) 310.
- etherization, (40) 837.
- evaporated, analyses, (32) 762.
- evaporation, (26) 156; (35) 418; (38) 207; (39) 808.
- factors affecting—
 - production, (28) 143.
 - yield, color, and growth, (28) 639.
- fall v. spring planting, (26) 238; (37) 743.
- fasciation in, (36) 837.
- fertile and self-fertile varieties, (40) 638.
- fertilizer experiments, (26) 817; (28) 47, 143, 740; (29) 437, 539; (30) 640; (31) 335; (33) 45; (34) 143, 149, 833; (35) 38, 235, 238, 342, 447, 540, 837; (37) 41, 344, 647, 743, 833; (38) 42, 244, 345, 540, 639; (39) 40, 139, 242, 346, 347, 445; (40) 149, 837.
- fibro-vascular system, (27) 538; (29) 542.
- fluctuating characteristics of, (26) 336.
- for livestock, (31) 365.
- forcing experiments, (38) 443.
- forecasting probable bloom, (37) 744.
- foreign markets for, (38) 42.

Apples—Continued.

from scions from high- and low-producing parents, (31) 334.
 frost injury, (27) 546; (29) 49, 547; (37) 344.
 frozen, as affected by rapid thawing, (32) 43.
 fruitfulness, factors in, (40) 836.
 girdling, (40) 837.
 grading and handling, (34) 149.
 grading and packing law in Delaware, (37) 745.
 grading and packing law in Maryland, (37) 143.
 graft hybrid, (31) 140; (39) 241.
 grafting experiments, (39) 40.
 grafting on pear stocks, (37) 40.
 graphic summary of seasonal work, (39) 495.
 gross morphology, (29) 541.
 gross vascular anatomy, (36) 140.
 growth—
 and color development, (35) 838.
 as affected by meteorology, (29) 510.
 as affected by soils, (29) 416.
 studies, (39) 844.
 handling and storing, (35) 342; (38) 143.
 hardness—
 in, (35) 236.
 in relation to structure and composition, (34) 342.
 on different stocks, (40) 837.
 hardy varieties, (39) 445.
 harvesting, (34) 438.
 harvesting and marketing, (36) 742.
 harvesting dates, (30) 344.
 hawthorn aphid affecting, (26) 247.
 household use, (40) 173.
 improvement, (28) 144; (35) 342.
 improvement by scion selection, (33) 237, 239.
 incipient drying of leaves and fruit, (35) 238.
 inflorescence and fruit of, (36) 331.
 inheritance of characters, in, (28) 639.
 inoculation experiments with brown rot fungus, (33) 247.
 insect scars, (39) 257.
 insects affecting, (26) 48, 742, 757, 840; (29) 353; (30) 642, 753, 853; (33) 45, 59, 652, 695, 840; (34) 833; (35) 853; (37) 847, 848; (38) 156, 460, 843.
 insoluble carbohydrates or marc, (27) 39, 241, 255, 664.
 internal structure, (36) 41.
 interrelation of root and scion, (35) 142.
 irrigated—
 and nonirrigated, composition, (30) 643.
 keeping quality, (32) 743.
 irrigation experiments, (27) 743; (33) 683; (38) 242.
 keeping quality, (34) 634; (38) 844; (40) 246.
 keeping quality, relation to soil moisture, (37) 41; (40) 741.
 lead arsenate injury, (31) 141; (40) 639.
 leopard moth affecting, (26) 150.
 Lepidoptera infesting, (40) 756.
 limb and twig disease of, (36) 746.
 liming experiments, (39) 445.
 marketing, (32) 91; (39) 90.
 marketing—
 and distribution, (34) 149.
 by parcel post, (36) 742.
 cooperatively, (29) 392; (37) 143.
 in North Carolina, (33) 595.
 McIntosh, characteristics, (28) 639.
 McIntosh, drought injury, (40) 849.
 Monilia affecting, (26) 849.
 mulching experiments, (34) 833.
 new, description, (29) 436, 838; (31) 337; (32) 438, 744; (35) 37.
 new varieties, (27) 144.
 nitrogen for, (39) 241; (40) 837.
 nomenclature, Australian, (39) 844.
 Northern Spy seedlings, characteristics, (31) 440.
 nursery, root systems of, (35) 142.
 odoriferous substances of, (26) 208.
 of colder parts of United States and Canada (26) 540.
 Georgia, peculiarities, (31) 440.
 Germany, (33) 838.
 lower Seine regions, composition, (30) 16.
 New York, (29) 41.
 orange rust of, (29) 547.
 oriental peach moth on, (39) 259, 261.
 packing, (28) 237; (29) 838; (30) 41; (35) 838; (37) 648; (38) 246.

Apples—Continued.

parthenocarp in, (34) 226.
 pear blight on, (40) 348.
 pear thrips affecting, (27) 156; (40) 547.
 picking and handling, (34) 437.
 picking maturity, (37) 543.
 plant food removed by, (36) 39.
 planting—
 and care, (38) 245.
 costs, (38) 41.
 with dynamite, (32) 535; (35) 236, 752.
 pollination, (27) 744; (31) 534; (32) 743; (34) 233, 341; (39) 138; (40) 148, 149, 638, 740.
 pollination, relation to weather conditions, (35) 237.
 preservation, (29) 312.
 prices and receipts in Boston, (39) 895.
 propagation, (33) 238.
 propagation and shipping experiments, (34) 637.
 protection against rabbits, (34) 250.
 pruning, (29) 148; (30) 739; (33) 837; (37) 344; (39) 541; (40) 639.
 pruning—
 and training, (37) 344.
 at planting, (34) 342.
 experiments, (26) 45; (35) 142; (36) 237, 535; (37) 240; (39) 40, 139, 347; (40) 837.
 studies, (39) 42.
 summer, (34) 533.
 summer v. winter, (34) 738; (37) 647.
 wounds, (40) 341.
 quality in, analysis, (29) 40.
 receipts and wholesale prices in New York City, (31) 46.
 reducing and nonreducing sugars in, (29) 503.
 respiration of in gases, (29) 135.
 ringing and stripping, (39) 40.
 ringing experiments, (32) 636.
 ringing wounds, (39) 41.
 ripening—
 chemical and physical changes, (39) 121.
 factors in, (39) 310.
 process, (34) 201.
 rôle of polyatomic phenols in, (26) 208.
 root pruning, (39) 40.
 Sclerotinia sp. affecting, (26) 343.
 score cards for, (28) 492; (35) 236.
 seed production, (38) 245; (39) 40.
 seedless, tests, (29) 42.
 seedlessness in, (30) 642.
 seedling—
 descriptions, (27) 343.
 from selected trees, (39) 844.
 notes, (32) 539.
 variation in, (30) 144.
 selection experiments, (33) 236, 237; (37) 743.
 self-fertility, (37) 744; (39) 541.
 self-fruitfulness and self-sterility in, (31) 337.
 self-sterility in, (33) 236; (35) 837; (40) 148.
 sensitivity to poison, (35) 456, 457.
 shipping, heavy loading in, (39) 748.
 silver lead disease affecting, (29) 845.
 snout beetles affecting, (26) 759.
 sod v. tillage, (26) 45.
 sod mulch v. tillage, (30) 640, 642; (34) 148.
 spray injury, (38) 641.
 spray schedule, (39) 140, 242.
 sprayed, arsenic on, (38) 54.
 spraying, (29) 426; (33) 439, 538; (36) 535; (37) 744; (38) 550; (40) 162, 837.
 spraying—
 dust v. liquid, (32) 551; (37) 832, 833.
 experiments, (27) 143, 439; (28) 47, 348, 436; (30) 640; (33) 45, 141, 648; (34) 146; (35) 39, 342; (36) 240; (37) 40, 242, 447, 647; (38) 551; (39) 343, 345, 348, 349, 548, 552, 651, 760, 865.
 in blossom with tobacco extract, (31) 548.
 summer, (29) 146.
 with Bordeaux, (40) 746.
 with lime arsenate, (40) 164.
 stock and scion relations, (39) 541.
 stocks—
 dwarf, (39) 347.
 for, (33) 239; (39) 40, 645, 843, 864.
 Siberian crab, (39) 346.
 storage, (26) 441; (29) 40; (32) 141; (36) 240; (38) 143, 241; (39) 310, 770; (40) 849.
 storage—
 changes during, (39) 121.
 experiments, (33) 340.

Apples—Continued.

- storage—continued.
 - houses for, (32) 88; (38) 88.
 - in peat dust, (29) 641.
- sulphur spotting, (39) 856.
- temperatures injurious to, (27) 413, 439.
- thinning experiments, (28) 47; (29) 541; (32) 438, 637; (33) 47; (37) 448; (39) 139.
- top working, (27) 744.
- top working, cost, (35) 342.
- transplanting experiments, (35) 37, 38.
- treatise, (27) 538; (34) 342.
- tree census in Washington, (40) 340.
- tree characters, (35) 236.
- variability of yield, (38) 744.
- variation in, (31) 636, 836; (35) 838; (39) 541.
- varieties, (28) 436, 838; (29) 235; (32) 538; (33) 237, 534, 637; (34) 42; (36) 742; (37) 143, 240, 241; (38) 41, 142; (39) 40, 445.
- varieties—
 - for Australia, (29) 340.
 - British Columbia, (35) 237.
 - home orchard, (40) 341.
 - Idaho, (33) 44.
 - Minnesota, (39) 445; (40) 148.
 - New Jersey, (33) 439.
 - Northwest, (39) 346, 844.
 - Ohio, (29) 395; (37) 241.
 - Oregon, (39) 241.
 - Pacific Northwest, (29) 745.
 - Pennsylvania, (31) 45.
 - western Washington, (33) 44.
- identification, (28) 237; (35) 236.
- in Australia, (39) 844.
- Germany, (31) 46.
- Iowa, (37) 647.
- Missouri, (27) 844.
- Ohio, (35) 40.
- Oklahoma, (27) 241.
- United States, (32) 438.
- United States and Canada, (28) 237.
- Virginia, (27) 144.
- recognizing, (31) 494.
- resistant to cedar rust, (33) 248.
- resistant to diseases, (29) 246.
- susceptible to diseases, (29) 436; (31) 53.
- variety index, (26) 238.
- variety tests, (39) 346.
- winter—
 - injury, (36) 431; (40) 835.
 - injury in Minnesota, (40) 837.
 - pruning experiments, (39) 44.
 - washes for, (35) 38.
- winterkilling, (32) 43.
- winterkilling of twigs and roots, (30) 147.
- wound stimulation and closure in, (26) 826.
- yield of individual trees, (33) 237.
- yields, (27) 343.
- yields at different ages, (33) 439.

Apricot—

- as root stock, tests, (40) 445.
- brown rot, treatment, (40) 851.
- buds, analyses, (31) 837.
- buds, resistance to frost, (30) 839.
- buds, spray injury, (40) 52.
- Coryneum fruit spot, notes, (34) 352.
- Coryneum rust, notes, (33) 549.
- desert, description, (30) 41.
- dieback or winterkilling, notes, (30) 537.
- disease in Rhone valley, (35) 249; (37) 250.
- diseases in France, (35) 49, 50.
- fire blight, notes, (29) 848.
- flowers, polymorphism in, (28) 540.
- fruit spots, descriptions, (35) 654.
- gummosis—
 - bacterial, (39) 151.
 - description, (38) 650.
 - notes, (34) 54.
 - studies, (30) 749.
- kernel oil, analyses, (26) 504.
- kernels, microscopic identification, (28) 565.
- leaf and twig curl, notes, (36) 647.
- Monilia blight, studies, (34) 351.
- pollen, frost resistance of, (29) 437.
- rust, notes, (39) 850.
- rust, treatment, (40) 851.
- scab or black spot, notes, (36) 845.
- scab or freckle, notes, (30) 537.
- seeds, oil content, (36) 803.
- sour sap disease, notes, (34) 54; (36) 451.

Apricot—Continued.

- stones—
 - histological characteristics, (27) 112.
 - hydrocyanic acid content, (27) 12.
 - thrips, new species, (40) 853.
 - tree disease, notes, (31) 539.
- Apricots—
 - acidity, (32) 110; (37) 715.
 - blooming periods, (37) 633.
 - composition as affected by irrigation, (29) 236.
 - cost of precooling, (34) 637.
 - crown gall affecting, (28) 447.
 - crown gall resistance in, (35) 645.
 - culture in Mesa County, Colorado, (37) 241.
 - destruction by black scale, (26) 555.
 - dried—
 - analyses, (30) 861.
 - examination, (36) 466.
 - inoculation experiments with brown rot fungus, (33) 247.
 - microbiology, (34) 460.
 - preparation and use, (29) 462.
 - drying, (27) 146; (37) 114, 715.
 - fruit stocks for, (38) 345.
 - growth as affected by meteorology, (29) 510.
 - injuries by freezing, (26) 749.
 - localization of acids and sugars in, (36) 110.
 - oriental peach moth on, (39) 259, 261.
 - pear thrips affecting, (27) 156.
 - pollination experiments, (34) 233.
 - protection from cold, (39) 45.
 - pruning, (32) 837.
 - pruning experiments, (40) 445.
 - "salmon fly" injury, (39) 257.
 - spraying experiments, (28) 652.
 - stocks for, (40) 445.
 - sweet, composition of kernels, (27) 801.
 - tree census in Washington, (40) 340.
 - varieties, (37) 241; (38) 41.
- Aproctonema entomophagum* n.g. and n.sp., notes, (38) 563.
- Aprostocetus whitmani* n.sp., description, (36) 259.
- Apterotrix longiclava* n.sp., description, (35) 366.
- Aptinotrips rufa*, notes, (28) 452.
- Aptosimum albomarginatum*, analyses and digestibility, (32) 167.
- Aquatic products, food value, (39) 67.
- Aqueous—
 - extracts, evaporation apparatus, (34) 608.
 - solutions—
 - extraction with ether, (37) 414.
 - ice crystallizations from, (36) 419.
 - vapor in atmosphere, condensation, (38) 210.
- Arabinose—
 - behavior in fermenting mixtures, (27) 502.
 - decomposition by yeast, (36) 609.
 - determination, (26) 709; (37) 617.
 - reducing power, (33) 314.
- β -*d*-Arabinose, crystallography and optical properties, (40) 202.
- Arabis disease, notes, (34) 750.
- Arachidic acid, detection, (36) 414.
- Arachin—
 - basic nitrogen distribution in, (37) 501.
 - chemistry of, (37) 8.
 - hydrolysis, (40) 109.
- Arachis—
 - hypogae—
 - agglutinating properties, (31) 774.
 - analyses, (31) 833.
 - analyses and digestibility, (28) 464.
 - oil—
 - accessory growth substance in, (38) 265.
 - determination, (30) 209.
 - germicide action, (40) 14.
 - prostrata as a green manure, (32) 423.
- Arachnida—
 - of British Columbia, (39) 464.
 - species injurious to man, (39) 768.
- Arachnids—
 - comparative physiology and morphology, (33) 553.
 - injurious to orchard, (29) 853.
 - relation to disease transmission, (30) 546.
- Arachniopsis albicans* n.g. and n.sp., description, (39) 30.
- Araceus fasciculatus*, see Coffee-bean weevil.
- Aragalli—
 - lamberti, absorption of barium chlorid by, (28) 527.
 - spicatus, poisoning of sheep by, (31) 781.

- Aralia**—
cordata, notes, (31) 140.
cordata, nuclein bases in, (33) 564.
spp., intumescences in, (26) 545.
- Araucaria**—
araucana (imbricata) and its resins, (40) 615.
forests of Chile, (32) 542.
- Arbela tetraonis**, description, (28) 753.
- Arbor Day**—
for roads, (29) 695.
in Kentucky, (27) 195.
in Porto Rico, (27) 899.
manual, (27) 595, 898; (31) 395, 495; (33) 495.
notes, (30) 196, 197.
suggestions, (31) 792; (32) 495, 496.
- Arbor vitae**—
Chinese, culture, (30) 346.
leaf miner, notes, (33) 252.
- Arboriculture**—
bibliography, (34) 435.
in Spain, (33) 238.
ornamental, notes, (29) 148.
treatise, (33) 537.
- Arbutin in**—
leaves of *Grevillea robusta*, (27) 527.
pears, (26) 327.
- Arceuthobium**—
injurious to conifers, (39) 57.
oxycedri, notes, (31) 56.
- Archibuteo lagopus sanctijohannis**, notes, (27) 355.
- Archips**—
argyrospila—
notes, (28) 450; (30) 157, 361; (32) 651; (40) 161.
pupal instar, (34) 357.
remedies, (31) 850; (34) 755; (35) 551; (37) 56.
studies, (27) 160; (28) 754.
cerasivorana—
natural control, (40) 62.
notes, (26) 856; (34) 752; (36) 856.
postvittatus, notes, (27) 155.
rosaceana, notes, (28) 854; (35) 853.
rosana, life history and habits, (30) 654.
rosana, notes, (35) 54.
spp., notes, (27) 161.
- Archytas**—
analis, parasitic on army worm, (34) 251.
piliventris, notes, (29) 356.
- Arctia caja**—
bacillary septicemia of, (29) 855.
notes, (30) 54, 855.
parasites of, (31) 251.
- Arctomys bobac**—
notes, (27) 454.
relation to plague, (26) 252, 653.
susceptibility to pneumonic plague, (28) 180.
- Arctostaphylos columbiana** n.sp., description, (34) 336.
- Arctoptera flavicosta**, destruction by *Coccobacillus acidiorum*, (33) 154.
- Ardisia crispa**, symbiosis with bacteria, (29) 30.
- Ardenna** (*Spiroptera*) *strongylina*, notes, (28) 285.
- Areca**—
catechu, culture in North Kanara, (34) 239.
nut mahali disease, treatment, (36) 48.
nuts, secondary bases of, (31) 309.
palm—
anaberoga, description, (37) 657.
collar rot, notes, (34) 50.
diseases, notes, (36) 348; (40) 48, 845.
koleroga, notes, (34) 55, 644; (38) 351, 548.
- Arecain**, chemical formula for, (31) 309.
- Arenga saccharifera**, culture and use, (32) 46.
- Arenivaga**, new species, (40) 754.
- Arressida annulicornis** n.sp., description, (28) 163.
- Argas**—
and spirochetes, notes, (31) 81.
miniatus—
anatomy, (29) 58.
as affected by Roentgen rays, (28) 57.
inheritance of spirochetal infection in, (27) 84.
notes, (26) 864; (27) 565, 762, 865; (31) 586; (39) 461, 768; (40) 267.
nymphs, infection by, (26) 460.
relation to spirochetosis in fowls, (26) 684.
remedies, (29) 58.
transmission of fowl pest by, (26) 890.
- Argas**—Continued.
persicus, see *Argas miniatus*.
spp., notes, (29) 563.
- ARGE salicis** n.sp., description, (30) 60.
- Arginase**—
action on creatin, (35) 313.
determination in animal organism, (34) 804.
in plants, studies, (37) 204.
preparation from fresh liver, (37) 112.
- Arginetta indica** affecting sugar cane roots, (38) 550.
- Arginin**—
determination, (35) 415.
determination in proteins, (26) 22; (37) 112.
distribution in plants, (30) 129.
effect on plant growth, (28) 324.
enzymatic splitting in lupines, (39) 733.
in chernozem soils, (35) 212.
grape leaves, (27) 731.
hops, (32) 502.
malt sprouts, (26) 24.
soils, (27) 500.
stachys tubers and citrus leaves, (26) 107.
metabolism, (38) 267.
notes, (28) 29.
nutritive value, (38) 569.
role in purin metabolism, (37) 265.
- Argulus foliaceus**, notes, (38) 661.
- Argyna cribraria** on san, (31) 850.
- Argyresthia**—
aternatella, notes, (34) 450.
atmoriella, notes, (34) 553.
conjugella, life history, (38) 261.
conjugella, notes, (36) 457.
illuminatella, notes, (34) 855; (35) 258.
n.sp., descriptions, (33) 748.
thuiella, notes, (33) 252.
- Argyrophylax albicincta**, description, (36) 359.
- Argyroploce duplex**, notes, (40) 456.
- Arhar**, culture experiments, (28) 633.
- Arion circumscriptus**, feeding habits, (34) 458.
- Arisaema** seeds, germination, (33) 29.
- Aristida**—
adscensionis, analyses, (36) 334.
adscensionis, studies, (38) 66.
pungens, culture and use, (33) 131.
spp., analyses and digestibility, (27) 871; (32) 167.
spp., roots of, (26) 535.
- Aristonetta**, a good genus, (40) 161.
- Aristotelia**—
salicifungiella, life history, (33) 655.
sp., notes, (32) 556.
- Arithmetic**—
agricultural problems in, (31) 793.
agricultural, textbook, (30) 795.
rural, textbook, (37) 95.
textbook, (36) 597.
- Arizona**—
Station—
financial statement, (27) 599; (29) 496.
notes, (27) 98, 696; (28) 195, 900; (29) 396, 697; (30) 796; (31) 300, 397; (33) 699, 900; (34) 198, 396, 495; (35) 95; (37) 700; (38) 299; (39) 95, 500, 694; (40) 98, 297.
report, (32) 598; (33) 96; (35) 594; (39) 799.
report of director, (27) 599; (29) 496.
University, notes, (27) 98; (28) 195, 900; (29) 396, 697; (30) 796; (31) 99, 300, 397, 795; (32) 94, 395, 497; (33) 699, 900; (34) 396, 495; (35) 95, 596; (37) 700; (38) 299; (39) 95, 500, 694; (40) 98, 297, 495, 695.
- Arkansas**—
river, low water in, (27) 115.
Station, notes, (26) 494; (27) 696; (29) 300, 396, 497, 697; (30) 95, 796; (31) 197, 496; (32) 198, 395, 694; (33) 399, 900; (35) 95; (37) 97; (38) 96; (39) 95, 197, 300, 399; (40) 297.
Station, report, (40) 796.
University, notes, (26) 494; (27) 300, 696; (29) 300, 396, 497, 697; (30) 95, 796; (31) 197, 496; (32) 198, 395, 694; (33) 399, 900; (35) 95; (36) 694; (37) 97; (38) 96, 498; (39) 95, 300, 399; (40) 297.
- Armadiidium vulgare**—
as affected by Roentgen rays, (28) 57.
notes, (27) 658; (31) 758.
- Armadillo**, nine-banded, biology and habits, (29) 755.
- Armatella litseae**, notes, (37) 652.

- Armillaria—**
mellea—
 description, (30) 151; (32) 238.
 development, (33) 130.
 new hosts for, (33) 550.
 notes, (26) 345, 628; (27) 450; (29) 851; (32) 50, 657, 845; (33) 846; (34) 644; (35) 351, 752; (40) 749.
 on nursery stock, (33) 744.
 orchard trees in California, (32) 241.
 pear, (40) 252.
 walnut, (39) 58.
 studies, (31) 246; (36) 751.
 symbiosis with *Gastrodia elata*, (27) 224.
 treatment, (30) 649; (33) 149; (36) 846.
root rot—
 notes, (40) 748.
 of citrus trees, (39) 152.
 on English walnut, (38) 152.
 sp., notes, (31) 152.
 sp. on oaks, (34) 241.
 spp. on forest trees, (40) 349.
- Army—**
 baking, manual, (37) 63.
 biscuit, recipes, (34) 256.
 bread, notes, (26) 464.
 cutworm, *see* *Chorizagrotis auxiliaris*.
 raticons, (40) 68, 362, 560, 564.
rations—
 description and preparation, (29) 661.
 field service, scale for, (30) 169.
 food value, (29) 567.
 in Europe, (32) 562.
 in United States, (32) 459, 460.
 notes, (33) 165, 365.
worm—
 baits, tests, (39) 361.
 biology, (34) 455.
 control in Massachusetts, (33) 144.
worm, fall—
 life history and remedies, (29) 655.
 notes, (27) 559, 659; (28) 554; (29) 53, 353, 356, 652; (30) 154, 252, 656; (36) 254.
 on cranberry, (38) 159.
 studies, (34) 163; (35) 56.
 summary of information, (40) 263.
worm—
 injurious to cranberries, (33) 352.
 life history, (35) 854.
 life history and remedies, (38) 54.
 notes, (27) 155, 656, 659; (29) 252; (32) 153; (33) 58; (34) 158, 453, 494, 752; (35) 466; (36) 854.
 on sugar cane in Mexico, (40) 57.
 outbreak in 1914, (35) 553.
 outbreaks in Canada, (35) 356.
 parasites of, (34) 251.
 parasitized, food of, (35) 553.
 polyhedral virus, (40) 255.
 remedies, (27) 434; (30) 456.
 semitropical, notes, (28) 654.
 studies, (35) 56.
 wheat-head, notes, (26) 59; (28) 160.
- Arnica montana**, hydrocarbons in, (26) 107.
Arracacia esculenta, analyses, (31) 863.
Arrak, judging, (26) 209.
Arrhenal, use against Texas fever, (36) 384.
Arrhenatherum—
avenaceum—
 notes, (27) 35.
 relation to oat mildew, (35) 651.
elatus—
 dissemination by insects, (27) 47.
 seeding on oranges, (30) 35.
- Arrhenophagus—**
chionaspis, notes, (26) 152.
n.spp., descriptions, (35) 365.
- Arrowhead tubers**, sugar in, (30) 63, 502.
- Arrowroot—**
 bagasse, analyses, (30) 565.
 culture experiments, (31) 226.
 culture in Philippines, (40) 231.
 examination, (29) 361.
 fertilizer experiments, (33) 227.
 insects affecting, (30) 752.
 production in St. Vincent, (39) 835.
 starch content, (35) 108.
 varieties, (30) 434.
- Arsenate—**
 formation in dipping tanks, (31) 483.
 of iron, insecticidal value, (27) 755.
- Arsenates—**
 effect on sugar cane roots, (38) 238.
 for oriental peach moth control, (40) 756.
 toxicity, (37) 759.
- Arsenic—**
 absorption by green plants, (30) 130.
 acid, reduction to arsenious acid, (30) 801.
 as a normal element of soils, (30) 321.
compounds—
 biological decomposition, (32) 474.
 effect on plant growth, (31) 325; (32) 121.
 toxicity toward plants, (33) 327.
 tuberculoal action, (35) 181.
content of—
 grapes and wine, (26) 841.
 leaves, (29) 628.
 copper sprays, preparation, (40) 843.
 cumulative action in dipping, (34) 186.
 detection, (28) 804; (36) 203.
detection—
 in bees, (36) 59.
 in water, (34) 410.
 modified Marsh's test, (27) 409.
 determination, (28) 24, 410; (35) 207; (36) 300, 806; (39) 113, 508, 715.
determination in—
 baking powder, (27) 497; (29) 799.
 dipping fluids, (27) 477; (30) 801.
 foods, (27) 613; (32) 298.
 fungicides and insecticides, (30) 416.
 insecticides, (26) 21; (32) 296; (36) 299; (38) 804.
 lead arsenate, (27) 504; (29) 797.
 organic matter, (37) 713.
 shellac, (28) 310.
 soils, (27) 499; (28) 507.
 distribution in animals, (27) 180.
effect on—
 development of corn, (33) 522.
 nitrogen-fixing organisms of soils, (35) 515.
 nitrogen-fixing power of soils, (32) 720.
 nitrogen transformation in soils, (30) 423, 424.
 plants, (38) 628.
 soil bacteria, (38) 322, 428.
 soils, (32) 730.
 sugar beets, (26) 225.
 examination, (31) 509.
 fixation in surface soils, (34) 421.
 in baking powders, (29) 866.
 gelatin, (26) 464.
 hops, (38) 9.
 milk, (27) 677.
 orchard soils, (31) 720.
 parasitic or parasitized plants, (27) 830.
 plant kingdom, (28) 526.
 plants, rôle, (37) 130.
 shellac, (26) 710.
 soils, (30) 423.
 sulphured food products, (39) 206.
 tobacco, (31) 715.
 vegetables, (27) 269; (32) 628.
 insecticidal value, (34) 60; (37) 559.
 on sprayed fruits and vegetables, (38) 54.
 poisons, use of fungicides with, (38) 156.
 solutions, blood charcoal as a purifying agent for, (33) 110.
 sprays for weed eradication, (40) 328.
 sulphid, larvicidal value, (34) 359.
use against—
 foot diseases in horses, (29) 783.
 surra, (29) 883.
 water-soluble, determination in lead arsenate, (36) 715; (37) 616.
 white, dosage for sheep, (27) 653.
- Arsenical—**
 compounds, bactericidal action, (39) 488.
 dip tester, (35) 678.
dips—
 alkali content, (26) 411.
 for cattle ticks, (27) 77, 84, 163; (29) 287; (32) 274; (33) 679.
 methods of analysis, (31) 115.
 notes, (30) 778.
 oxidation, (26) 174; (31) 776; (33) 478, 680; (38) 585.
 preparation, (26) 382; (29) 585; (31) 776; (32) 778.
 rendering harmless, (27) 899.
 tick-killing properties, (29) 886.
 treatment, (26) 382.

Arsenical—Continued.

- injury through bark of fruit trees, (36) 849.
- insecticides, chemistry of, (28) 308.
- salts, analyses, (23) 309.
- spray injury, prevention, (34) 154.
- sprays—
 - effect on bees, (32) 244.
 - effect on color of apples, (28) 145.
 - spreaders for, (38) 858.
 - use against wild morning-glory, (38) 140.
 - use of cactus solution in, (32) 557.

Arsenicals—

- as antiparasitides, (32) 474.
- effect of soap on settling, (23) 354.
- for plant protection, (30) 236.
- for poison baits, (39) 361.
- for weed control, (40) 429.
- production, (33) 876.
- root injury by, (40) 449.
- substitutes for, (29) 758.
- toxicity and use, (34) 851.
- toxicity, factors affecting, (36) 754.

Arsenious acid—

- detection in dips, (31) 483.
- determination, (28) 804.
- effect on sugar cane roots, (38) 238.

Arsenious oxid—

- as an alkalimetric standard, (34) 312.
- as standard in iodimetry, (40) 609.
- preparation and testing, (39) 507.

Arsenite—

- of zinc as a substitute for arsenate of lead, (30) 53.
- oxidation in cattle-dipping tanks, (26) 382.
- solutions, determination of strength, (32) 207.

Arsenites, *see* Paris green.

Arsenobenzol—

- bactericidal action, (39) 488.
- in giardiasis, treatment, (40) 884.
- use against equine influenza, (30) 385.

Arsenophenyglycin, use against dourine, (26) 881; (27) 284.

Arsphenamin, effect on complement and antibody production, (40) 287.

Art in the home, (26) 299.

Artemisia—

- frigida, analyses, (26) 612.
- maritima, hydrocarbons in, (26) 107.
- spp., analyses, (33) 466.
- water requirements, (29) 826.

Arterial sclerostomatosis in horses, (32) 84.

Arteriosclerosis—

- in sheep, studies, (28) 182.
- relation to calcium in the diet, (31) 357.
- studies, (26) 375.

Artesian water—

- for irrigation in Montana, (36) 486.
- in Australia, (31) 185.
- eastern and southern Florida, (30) 119.
- Missouri, (31) 812.
- New South Wales, (30) 119.
- of Argerich, Argentina, (28) 214.

Artesian wells—

- decrease of flow, (34) 483.
- in western Queensland, (38) 591.
- increasing yield of, (29) 484.

Arthritis—

- chronic, in swine, (38) 381.
- in colts, studies, (31) 887.
- infectious, in foals, (37) 382.
- pyemic, in foals, (34) 83.
- septic, in foals, (26) 384.
- suppurative, treatment, (40) 181.

Arthronemom macrostachyum, analyses, (33) 466.

Arthrocnodax—

- constricta n.sp., description, (33) 255.
- meridionalis n.sp., description, (27) 57.
- occidentalis—
 - n.sp., notes, (28) 858.
 - notes, (23) 457.
 - parasitic on red spider, (32) 157.

Arthrolytus aeneoviridis, notes, (39) 870.

Arthropods—

- affecting dogs, (39) 892.
- affecting man, (32) 846.
- affecting man and animals, (27) 453.
- blood-sucking, relation to kala azar, (28) 159.
- entoparasites of, (39) 658, 659.
- relation to disease, (30) 455.

Artichoke—

- diseases, notes, (38) 41.
- foliage, digestibility, (32) 258.
- globe, culture and uses, (38) 41.
- globe, insects affecting, (40) 57.
- Jerusalem—
 - as food, (36) 561; (39) 67.
 - in France, (40) 35.
 - inulin in, (39) 524, 732.
 - notes, (26) 362.

moth, notes, (33) 554.

- sclerotinia diseases, (40) 49.
- sunflower grafts, studies, (39) 645.

Artichokes—

- analyses, (31) 433.
- culture, (27) 32.
- culture and use, (40) 763.
- culture experiments, (28) 531; (32) 132; (37) 132.
- culture in Gironde, (30) 738.
- insects affecting, (33) 856; (38) 41.
- v. potatoes for forage, (31) 433.
- variation in, (37) 342.

Artocarpus integrifolia, notes, (30) 525.

Artona walkeri, notes, (33) 856.

Arum, culture experiments, (30) 229.

Arundinella setosa, notes, (26) 361.

Asafetida, lead number, (27) 499.

Asal fly, notes, (27) 53.

Asarum europaeum, notes, (27) 851.

Asbestos stopper for use in distillation, (38) 203.

Ascariasis—

- in horses and swine, (35) 489.
- in horses, treatment, (40) 586.

Ascarids—

- affecting sheep in Algeria, (31) 86.
- chemistry and toxicology, (27) 290.
- development, (26) 279.
- in dogs, studies, (40) 186, 187.
- in horses, treatment, (26) 588.
- remedies, (37) 578.
- toxic product, studies, (40) 84.
- toxins of, (30) 278.

Ascaris—

- canis and A. felis, comparison, (37) 163.
- equorum extracts, effect on blood coagulation, (26) 279.
- infestation, effect on serum treatment of hog cholera, (37) 881.
- inflexa, treatment, (35) 385.
- lumbroides—
 - and A. mystax in mice, (39) 286.
 - and A. suilla, development in rats and mice, (37) 374.
 - and related forms, life history, (38) 385.
 - blood-destroying substance in, (40) 880.
 - eggs of, (33) 681.
 - studies, (39) 587, 681, 886.
 - viability of ova, (26) 588.

megalocephala—

- disease of, (28) 181.
- studies, (27) 384.
- toxic properties, (26) 481; (30) 784.
- poisoning, notes, (26) 883.
- spp., dissemination by flies, (30) 659.
- spp., embryology, (30) 555.
- spp., physiological investigations, (31) 679.

suum—

- catalase content, (38) 582.
- description, (34) 280.
- in sheep, (31) 781.
- vituli as a cause of intestinal impaction, (26) 279.

Ascheronia—

- (cubensis?) on star scale, (38) 157.
- paraensis n.sp., notes, (37) 148.
- spp., descriptions, (33) 459.
- spp., notes, (27) 860; (30) 455.
- suzukii n.sp., notes, (30) 455.
- turbinata, ascospore stage, (31) 145.

Ascheronias, culture and germination tests, (27) 356.

Asclepias—

- curassavica, carotinoid content, (31) 803.
- fruticosa, fiber from, (39) 442.
- spp., notes, (32) 778.
- syriaca, geographical distribution, (26) 335.
- verticillata, toxicity, (39) 787.
- Ascobotus parasiticus n.sp., description, (33) 647.

Ascochyta—

- abelmoschi n.sp., description, (39) 649.
 - atropa, notes, (32) 749.
 - boerhaaviae n.sp., description, (37) 748.
 - cardiaca n.sp., description, (34) 843.
 - citrullina, inoculation experiments, (29) 847.
 - clematidina, studies, (33) 650; (34) 249.
 - colorata as affected by cold, (34) 538.
 - corticola, notes, (31) 244.
 - fagopyri tulensis, notes, (28) 443.
 - gerberae n.sp., description, (31) 845.
 - heveae n.sp., notes (39) 452.
 - hortorum—
 - notes, (27) 849.
 - on artichoke, (37) 150.
 - studies, (31) 344, 747.
 - laricina n.sp., description, (30) 746.
 - lycopersici on greenhouse tomatoes, (36) 250.
 - n.sp., descriptions, (28) 149.
 - on leguminous plants, life history, (33) 548.
 - on peas, (39) 354.
 - pallor, notes, (27) 448.
 - perfect stage, (28) 849.
 - piniperda, notes, (31) 646.
 - pisi—
 - ascigerous stage of, (29) 645.
 - life history, (28) 845.
 - notes, (29) 447; (32) 544; (33) 647.
 - studies, (31) 746.
 - treatment, (32) 546.
 - sp., notes, (27) 45; (37) 550.
 - sp. on cereals, (32) 843.
 - sp. on clematis, (31) 347.
- Ascogaster—
- canifrons, notes, (30) 755.
 - carpocapsae, notes, (28) 61; (39) 361.
- Ascomycetes—
- culture experiments, (32) 341.
 - sp. on betel vine, (34) 50.
- Ascomyphyllum nodosum, analyses, (37) 814.
- Asemantoides dubius n.sp., description, (37) 59.
- Ash—
- and willow scale, notes, (30) 53.
 - as affected by tarring roads, (26) 432.
 - borer, see *Podosesia syringae*.
 - characteristics and management, (34) 346.
 - constituents—
 - effect on growth of pigs, (28) 98.
 - role in living plants, (35) 131.
 - determination—
 - in foodstuffs, (29) 366, 809.
 - in plant substances, (34) 202.
 - of alkalinity, (36) 204.
 - distribution and cut in North Carolina, (33) 144.
 - eccentric growth of, (31) 538.
 - factor in poultry feeding, (31) 568.
 - forcing experiments, (28) 435.
 - from body fluids, methods of analysis, (32) 114.
 - in growing pigs as affected by protein consumption, (32) 72.
 - leaf bug, notes, (36) 551; (40) 753.
 - manna, composition and adulteration, (33) 443.
 - mountain—
 - host of apple aphid, (28) 251.
 - host of *Archips argyrospila*, (27) 160.
 - of grains, copper determination in, (40) 807.
 - of vinegar, notes, (27) 410.
 - psylla, notes, (26) 146.
 - rust, notes, (26) 52.
 - sawfly, notes, (26) 254.
 - seeds, oil from, (26) 503.
 - tees, metabolism and translocation in, (27) 425.
 - utilization, (37) 548.
 - volcanic, reclamation, (28) 220.
- Ashes—
- analyses, (28) 326; (33) 723; (34) 425; (35) 127; (38) 625; (39) 730.
 - as fertilizer, (34) 494.
 - as source of potash, (34) 327, 425; (37) 427.
 - corn cob, analyses, (40) 621.
 - crematory, analyses, (27) 327.
 - damage caused by, (28) 811.
 - effect on vegetation, (30) 131.
 - fertilizing value, (30) 230; (32) 140; (39) 116, 429, 430.
 - from *Vesuvius*, analyses, (27) 422.
 - incinerator, analyses, (35) 128.
 - injury to plants, (32) 729.
 - leached, fertilizing value, (26) 427.
 - utilization in agriculture, (40) 129.

Ashes—Continued.

- volcanic, effect on soils, (29) 726.
 - weed, effect on tobacco soils, (36) 513.
 - wood, see *Wood ashes*.
- Asiatic ladybird, notes, (28) 159; (29) 258.
- Asilidae, new species from southern California, (35) 855.
- Asio wilsonianus, notes, (27) 355.
- Asiphonaphis pruni n.g. and n.sp., description, (40) 355.
- Asiphum sacculi n.sp., description, (31) 351.
- Askaron, studies, (40) 84.
- Asobara orientalis n.sp., description, (30) 256.
- Asparagin—
- as source of ammonia, (29) 723.
 - assimilation by plants, (26) 32.
 - distribution in plants, (30) 129.
 - effect on—
 - baking quality of flour, (26) 356; (30) 555.
 - fungi, (28) 444.
 - legume bacteria, (29) 733.
 - milk production and quality, (26) 476.
 - wheat, (27) 731.
 - formation in lupines, (36) 632.
 - formation in sprouting vetches, (27) 634.
 - in hops, (32) 502.
 - malt sprouts, (26) 24.
 - sugar beets, (28) 810.
 - sugar cane juice, (30) 15.
- nitrification—
- as affected by lime, (38) 119.
 - in soils, (26) 722.
 - rate, (32) 124.
 - nitrogen assimilation from, (27) 331.
 - role in ripening seeds, (26) 730.
 - utilization by pea seedlings, (27) 730.
- Asparaginic acid—
- in mulberry leaves, (31) 203.
 - inversion of saccharose by, (32) 711.
- Asparagus—
- analyses and food value, (29) 461.
 - asiaticus, analyses and digestibility, (32) 167.
 - beans, description, (30) 828.
 - beetle—
 - egg parasite, studies, (33) 658.
 - notes, (27) 53; (28) 752; (33) 61.
 - 12-spotted, notes, (28) 351.
 - 12-spotted, studies, (29) 556.
 - breeding—
 - and selection, (38) 640.
 - experiments, (26) 44.
 - for rust resistance, (26) 44; (28) 339, 538; (36) 138.
 - review of investigations, (28) 539.
 - canned, tin poisoning from, (31) 67, 461.
 - canning, (38) 41.
 - chemical studies, (36) 839.
 - cold storage, (39) 344.
 - composition as affected by fertilizers, (27) 500.
 - cooking, (31) 855.
 - culture, (31) 739; (35) 141; (38) 41; (40) 538.
 - culture—
 - experiments, (35) 341; (38) 40.
 - in California, (35) 835.
 - in New Jersey, (40) 638.
 - on acid soil, (40) 324.
 - relation to soils, (26) 640.
 - deterioration in, (39) 13.
 - diseases, description, (32) 238.
 - diseases, treatment, (39) 52.
 - fertilizer experiments, (26) 31, 44, 299, 817; (28) 236, 325, 339; (34) 294; (36) 121, 138, 839.
 - fly, notes, (34) 851.
 - fly, remedies, (36) 355.
 - fungus disease of, (32) 146.
 - insects affecting, (28) 451; (38) 41.
 - juice, mannit from, (27) 502; (31) 10.
 - keeping after cutting, (37) 342.
 - marketing cooperatively, (29) 392.
 - miner, studies, (29) 555.
 - officialis fruit, composition, (39) 107.
 - plumosus nanus, tropisms of, (30) 430.
 - preparation and use, (32) 253.
 - preservation by freezing, (39) 344.
 - Rhizoctonia disease, (38) 648; (40) 747, 844.
 - roots as affected by fertilizers, (28) 236; (30) 142.
 - roots, carbohydrates in, (26) 24.
 - rust, notes, (28) 538; (38) 41.
 - rust-resistant strains, (40) 538.

Asparagus—Continued.

- seed, impermeable, viability, (35) 740.
- soup, notes, (29) 461.
- sp., analyses and digestibility, (27) 871.
- varieties, (38) 40, 241.

Aspartic acid—

- as source of ammonia, (29) 723.
- assimilation by plants, (26) 32.
- effect on—
 - action of alcohol on plant cells, (34) 333.
 - baking quality of flour, (26) 356; (30) 555.

Aspen—

- as permanent forest type, (37) 837.
- as temporary forest type, (38) 847.
- reproduction, (39) 50.
- reproduction as affected by grazing, (40) 448.
- soda pulp from, (31) 715.
- tortrix, notes, (40) 456.
- value in reforestation, (31) 839.

Aspergillopsis spp. in Norway, (31) 327.**Aspergillus**—

- in canaries, (29) 84.
- in ostrich chicks, (35) 678.
- in poultry, notes, (28) 185.

Aspergillus—

- ammonifying power, (32) 29.
- flavescens, notes, (28) 557.
- flavus, description, (33) 459.
- fumigatus—
 - description, (39) 648.
 - notes, (29) 84.
 - role in silage poisoning, (37) 728.
 - spore formation in, (29) 30.
 - toxin produced by, (27) 780.
- gracilis, occurrence in sugar, (26) 505.
- growth in arsenic solutions, (35) 281.
- nidulans, description, (39) 648.
- nidulans in canned foods, (40) 764.

niger—

- action of zinc sulphate on, (40) 222.
- amygdalin diastases in, (30) 241.

niger as affected by—

- acids and salts, (29) 734.
- chemicals, (28) 444; (30) 241, 630.
- manganese, (27) 129.
- metals, (30) 824.
- potassium, rubidium, and caesium, (28) 527.
- silver salts, (29) 554.
- zinc, (28) 226.

niger—

- assimilation of zinc by, (30) 523.
- citrus acid fermentation, (37) 613.
- development as affected by various salts, (28) 824.
- development in acid solutions, (27) 848.
- enzymes in, (30) 805.

niger, formation—

- and regulation of enzymes by, (31) 730.
- of ammonia by, (28) 803.
- of tannase in, (29) 132.

niger—

- group, studies, (36) 130.
- growth as affected by manganese, (29) 219.
- growth in plant decoctions, (37) 728; (38) 524.
- inulase formation in, (40) 518.
- invertase of, (28) 727.
- metabolism in, (30) 727.
- mutation in, (28) 430; (30) 630; (31) 225.
- nitrogen fixation by, (26) 123; (31) 721; (36) 632; (37) 129.
- nitrogen nutrition of, (27) 26; (32) 327.
- notes, (30) 450; (37) 51.
- on citrus, (35) 748.
- on onions, (37) 349.
- phosphorus assimilation in, (26) 203.
- relation to apple rot, (33) 348.
- relation to iodine compounds, (29) 133.
- sensitiveness to manganese, (27) 228.
- niger, utilization of—
 - copper by, (29) 628.
 - glucinum by, (29) 28.
 - phytin by, (30) 805.
 - uranium nitrate by, (29) 422.
 - zinc by, (31) 224.

niger, zymase formation in, (39) 733.**oryzae**—

- amylase of, (31) 13; (40) 504.
- enzymes of, (32) 710.
- in tamar-koji, (29) 161.

Aspergillus—Continued.**oryzae**—continued.

- koji acid from, (30) 202.
- utilization of rice proteins by, (29) 565.
- varieties of, (29) 565.
- parasiticus n.sp., description, (28) 746.
- sartoryi n.sp., studies, (29) 844.
- selective power of, (33) 824.
- sp., treatment, (33) 149.
- spp. affecting coffee grains, (34) 545.
- spp. as affected by phosphorus and magnesium, (29) 825.
- spp., cleavage of methyl glucosid by, (30) 11.
- spp., formation of tannase by, (27) 408.
- spp., growth in presence of salt, (32) 176.
- spp., notes, (28) 252, 562.
- spp., proteolytic activities, (40) 721.
- terreus n.sp., description, (39) 648.
- terricola, enzymes of, (33) 410.

Asperisporium caricae, notes, (37) 550.**Asphalt**—

- papers on, (33) 782.
- paving cements and road binders, (30) 290.
- penetration tests, (34) 685.
- production in United States, (38) 692.

Asphalts—

- rock, of Oklahoma, (29) 591.
- specifications and definitions, (35) 888.

Asphaltum—

- as dressing for fruit tree wounds, (34) 154.
- use against peach borer, (27) 54.

Asphondylia—

- miki, notes, (27) 161.
- opuntiae, *see* Cactus midge.
- websteri n.sp., description, (38) 563.

Aspidiotiphagus citrinus—

- endophagy, (38) 460.
- notes, (26) 247, 554; (28) 159, 754.
- parasitic on purple scale, (26) 757.

Aspidiotus—

- ancylus, *see* Putnam's scale.
- articulatus, notes, (27) 357.
- camelliae, *see* Greedy scale.
- destructor affecting bananas, (30) 157.
- destructor, notes, (29) 858; (36) 355.
- (Diaspidiotus) tsugae n.sp., description, (26) 248.
- ficus, *see* Florida red scale.
- hartii, notes, (40) 259.
- hederae, notes, (32) 56.
- juglans-regiae, *see* Walnut scale.
- n.sp. and n.subsp., descriptions, (40) 355.
- osborni, notes, (33) 252.
- ostreaeformis, *see* Fruit scale, European.
- oxyccoccus, notes, (28) 854.
- pectinatus n.sp., description, (27) 358.
- pernicius, *see* San José scale.
- rapax, *see* Greedy scale.
- spp., notes, (27) 756; (28) 854; (29) 654, 853; (38) 157.

(Targionia) vitis, notes, (26) 655.**trilobitiformis**, notes, (28) 752.**tsugae** in New Jersey, (34) 355.**uvae**, *see* Grape scale.**viticola** n.sp., description, (33) 653.**Aspidistra**, leaf spot disease of, (30) 448.**Aspidogastridae** of North America, (38) 365.**Aspirator**, description, (39) 714.**Aspirin**, determination, (27) 499.**Asses**—

- breeding in United States, (39) 74.
- color inheritance and sex ratio, (38) 574.
- digestion experiments, (32) 262.
- feeding experiments, (31) 769.
- improvement, value of good sires, (37) 866.
- in Germany, (33) 296.
- in Tunis, description, (27) 571.
- Poitou, measurements, (29) 169.
- textbook, (31) 470.
- treatise, (37) 769.

Assimilation and respiration of plants, relationship, (31) 222.**Association**—

- for Standardizing Paving Specifications, report, (28) 384.
- of Agricultural College Editors, (35) 199.
- Agricultural Experiment Stations of Germany, (28) 715.

Association—Continued.

- of American Agricultural Colleges and Experiment Stations, (26) 1, 8; (27) 798; (28) 7; (29) 601; (30) 399; (32) 1, 8, 194; (33) 94, 301; (34) 798; (35) 297, 701; (37) 601, 698; (38) 800; (39) 701, 800, 896.
- American Dairy, Food, and Drug Officials, (28) 863; (30) 862; (36) 561, 663; (38) 768.
- Austrian Experiment Stations, (30) 599.
- Drainage and Levee Districts of Illinois, proceedings, (28) 890.
- Farmers' Institute Workers, (26) 1.
- Feed Control Officials, (26) 1; (28) 74, 98; (30) 466; (32) 8, 200.
- Official Agricultural Chemists, (26) 97, 613; (27) 495, 616; (28) 513; (29) 795; (30) 317; (32) 8, 294; (33) 400; (34) 501; (35) 419; (36) 298; (37) 601; (39) 400, 702.
- Official Dairy Instructors, (27) 106.
- Official Seed Analysts, (26) 1, 200; (32) 8, 200; (34) 832; (39) 702.
- Southern Agricultural Workers, (34) 1; (40) 301.
- Asteia n.sp., notes, (35) 259.
- Asterochiton (Aleyrodes) packardii, notes, (33) 58.
- Asterocystis radialis, notes, (28) 52; (37) 248.
- Asterolecanium—
 - bambusae in California, (35) 358.
 - pustulans, notes, (33) 554.
 - quercicola, notes, (27) 755; (28) 353.
 - variosum (A. quercicola), notes, (38) 654.
- Asteroma—
 - brassicae, notes, (32) 545.
 - rosae, notes, (37) 550.
- Asterostroma albidocarneum, notes, (27) 749; (28) 649.
- Asters—
 - bacterial disease affecting, (27) 547.
 - black neck or wilt disease affecting, (34) 649.
 - China, varieties at Wisley, (33) 536.
 - cut, preservation, (31) 837.
 - fungus disease affecting, (26) 551.
 - Fusarium disease of, (32) 48.
 - mammal, (28) 438.
 - mildew affecting, (32) 544.
 - woody, identification, (29) 77.
 - woody, notes, (31) 578.
- Asterula chamaecyparissii n.sp., description, (27) 149.
- Asthenia, infectious, of fowls, (39) 291.
- Astragalus tristis, destruction of grain aphids by, (29) 452.
- Astragalus—
 - bisulcatus, toxicity, (37) 780.
 - mollissimus, description, (39) 386.
 - mollissimus, histology, (38) 481.
 - spp., notes, (32) 778.
 - toxicity, (26) 432.
- Astrebla—
 - pectinata, analyses, (28) 463.
 - pectinata, culture experiments, (30) 632.
 - triticoides, culture in Hawaii, (32) 729.
- Astyage—
 - lineigera, notes, (33) 658.
 - punctulata n.sp., notes, (37) 359.
- Astycus immunis, notes, (34) 652.
- Asympiesiella india n.sp., description, (36) 557.
- Asyndesmus lewisii, feeding habits, (29) 51.
- Ataxia crypta, notes, (38) 363.
- Atelenevra spuria, life history, (33) 860.
- Atelocera stricta, notes, (28) 654.
- Atemoya—
 - a new fruit for the Tropics, (31) 47.
 - asexual propagation, (32) 143.
- Atalla—
 - flacca, notes, (38) 164.
 - spinarum, biology, (33) 746.
 - spinarum, notes, (31) 548.
- Athene noctua, economic importance, (29) 651.
- Athaspeuta oryzae n.sp., description, (35) 365.
- Athletes—
 - and nonathletes—
 - as affected by breakfast and caffeine, (39) 68.
 - metabolism of, (33) 263.
 - training, (30) 465.
- Athyrosis, fetal, in pigs, (37) 278.
- Athyrsanus—
 - n.sp., description, (34) 255
 - spp., notes, (27) 858.

Atichia dominicana n.sp., description, (31) 242.

Atmometer—

- mounting, nonabsorbing, (40) 715.
- porous cup—
 - construction and use, (34) 34.
 - description, (33) 224; (36) 226.
 - notes, (39) 810.

Atmometers—

- discussion and use, (38) 523.
- relative merits, (33) 320; (37) 429.
- use in study of insects, (31) 350.

Atmosphere—see also Air.

- absorption of ultraviolet light by, (32) 210.
- and the Névé, aqueous exchange between, (38) 812.
- aqueous vapor of, (38) 210.
- charts, notes, (26) 214.
- circulation and temperature, (34) 614.
- circulation of, (31) 615; (32) 315; (35) 419, 808.
- composition, (28) 213.
- condensation of aqueous vapor in, (37) 716.
- dust layers in, (27) 316.
- eddy motion in, (34) 117.
- effect on evaporation, (33) 320.
- evaporation in, (31) 615.
- examination, (39) 210.
- function in wireless transmission, (32) 614.
- heating, (27) 616.
- higher, notes, (32) 614.
- horizontal and vertical movement, (36) 718.
- ionic densities, (38) 510.
- ionization of aqueous vapor in, (35) 618.
- meteorological elements, as affected by wind velocity, (40) 715.
- moisture condition, index, (38) 522.
- motion in lowest layers, (38) 511.
- nitrogen in, (38) 509.
- nocturnal cooling, (39) 114.
- of Mars, (32) 210.
- optical properties, (33) 19.
- penetrating radiation in, (34) 614.
- physics of, (28) 617; (39) 616.
- pressure waves in, (26) 118.
- propagation of sound in, (35) 618.
- radiation in, (33) 806; (38) 210.
- radioactive products in, (30) 619.
- radium emanations of, (31) 20, 511; (33) 211.
- revolving fluid in, (38) 511.
- solar, motion of, (31) 615.
- stories of, (35) 115.
- structure in clear weather, (27) 815.
- thermal state of, (31) 20.
- thermodynamics of, (32) 210.
- transparency for ultraviolet radiation, (38) 511.
- upper—
 - haze of, (29) 314.
 - ionization, (36) 419.
 - paper on, (27) 316.
 - windy, Doppler's principle, (38) 510.
- Atmospheric—
 - circulation and radiation, treatise, (34) 414.
 - conditions, effect on hardness of rain water, (29) 122.
 - conditions, relation to downy mildew, (26) 550.
 - electricity—see also Electricity.
 - as affecting plants, (40) 424.
 - during solar eclipse, (38) 510.
 - problems, (35) 419.
 - impurities, effect on vegetation, (26) 230; (30) 32.
 - moisture, see Humidity.
 - nitrogen, utilization, (27) 520.
 - noises, (34) 117.
 - optical disturbance of 1912-13, (31) 615.
 - optical disturbances, (38) 511.
 - polarization—
 - facts and theories, (27) 316.
 - from great heights, (38) 811.
 - pollution—
 - in England, (35) 15.
 - in Great Britain, (35) 420.
 - investigations, (34) 716.
 - measurement, (28) 717; (40) 209.
 - pressure, see Barometric pressure.
 - refraction at Mount Hamilton, (36) 19.
 - studies, (28) 213.
 - transparency for radiation, (31) 212.
 - turbidity, effect on solar radiation and skylight polarization, (29) 314.

Atmospheric—Continued.

- variations, relation to organic evolution, (26) 272.
- water vapor, data on, (37) 314.
- Atmospherics, neglect of, (32) 25.
- Atoposoma variegatum, studies, (28) 560.
- Atoxyl, use against—
 - catarrhal fever in cattle, (31) 381.
 - dourine, (26) 881; (27) 284.
 - equine influenza, (32) 379.
 - surra, (29) 883.
- Atractodes tenebriosus, notes, (33) 862.
- Atractonomus mali, notes, (30) 53; (32) 849; (40) 60.
- Atriplex—
 - canescens, localization of betain in, (27) 203.
 - halimoides, analyses, (27) 469.
 - hortensis, agglutinating properties, (31) 774.
 - hortensis, insect and arachnid enemies of, (29) 853.
 - leptocarpa canescens, culture experiments, (30) 632.
 - seed, impermeable, viability, (35) 740.
 - semibaccata, seeding on ranges, (30) 35.
 - spp., analyses, (33) 466.
 - vesicaria, analyses and digestibility, (26) 872; (32) 167.
- Atropa belladonna, breeding experiments, (30) 631.
- Atropin—
 - detection in water, (34) 410.
 - effect on absorption of sugar, (28) 763.
 - effect on milk secretion, (28) 175.
- Atta—
 - insularis, notes, (27) 756; (28) 855.
 - insularis, remedies, (35) 761.
 - spp., control in Argentina, (26) 452.
 - texana, occurrence in Louisiana, (38) 564.
 - texana, studies, (27) 263.
- Attagenus—
 - plebius, life history, (38) 557.
 - plebius, notes, (37) 567.
 - undulatus, studies, (37) 356.
- Attelabidae, notes, (30) 856.
- Ätvidaberg Dairy Bacteriological Institution, re-
port, (35) 379.
- Auchmeromyia luteola n.g. and n.sp., notes, (26) 559.
- Auchmeronyids, studies, (30) 458.
- Auction marketing, (40) 489.
- Aucuba—
 - japonica, blackening of leaves, (30) 524.
 - pectins of, (29) 608.
- Audubon, biography of, (39) 654.
- Augete decomposition by soil bacteria and yeast, (31) 121.
- Augomonoctenus libocedrii n.g. and n.sp., descrip-
tion, (40) 761.
- Aujesky's disease—
 - in Brazil, (28) 184.
 - in mules in Florida, (34) 275.
 - notes, (31) 579; (33) 179.
- Aulacaspis—
 - major n.sp., description, (37) 158.
 - manzanitae n.sp., notes, (29) 356.
 - pentagona—see also Diaspis pentagona.
notes, (26) 247, 452, 655; (27) 556; (30) 655.
 - parasites of, (34) 456.
 - remedies, (32) 755.
 - rosae, see Rose scale.
- Aulacophora foveicollis, notes, (27) 53.
- Aulax scabiosae, parasitized by Pediculoides ven-
tricosus, (27) 565.
- Auletes spp., notes, (30) 357.
- Aurochs—
 - extermination, (28) 466.
 - old pictures of, (28) 365.
- Aurora—
 - noteworthy, (26) 614.
 - of August 26, 1916; (37) 115.
 - of August, 1917, (38) 210.
 - of September 30, 1916; (36) 419.
- Auroral sound, notes, (31) 212.
- Auroras—
 - device for observing radiants, (38) 511.
 - notes, (34) 413, 614.
- Australia, tropical, settlement, (38) 812.
- Autoagglutinin in human serum, (39) 186.
- Autoclave for use in field laboratories, (40) 843.
- Autographa—
 - brassicae, see Cabbage looper.

Autographa—Continued.

- californica, see Alfalfa looper.
- precautions, remedies, (26) 250.
- Autolactotherapy, notes, (33) 477.
- Autolysis—
 - effect on cholesterol, (29) 309.
 - studies, (39) 607, 608.
- Automeris janus, notes, (38) 159.
- Automobile—
 - for soil cultivation, description, (27) 293.
 - mowing machines, descriptions, (27) 485.
 - registrations, licenses, and revenues, (35) 585; (37) 590.
- Automobiles—
 - effect on road surfaces, (29) 388.
 - relation to good roads, (29) 291.
 - use in stream measurement, (33) 777.
- Autoparasitism in Cassytha melantha, (34) 626.
- Autoserotherapy—
 - in veterinary practice, (30) 385.
 - investigations, (31) 876.
- Autotherapy, notes, (27) 684; (29) 175.
- Autovaccines in wound treatment, (40) 883.
- Auxanometer, description, (36) 226.
- Auximones—
 - bacterial test for, (34) 325.
 - effect on plant growth, (37) 719.
 - effect on soil bacteria, (37) 517.
 - formation, (36) 825.
- Auxoamylases—
 - nitrogenous, notes, (38) 311.
 - notes, (37) 204.
 - studies, (40) 504.
- Avalanches—
 - control in Switzerland, (29) 842.
 - in Northern Cascades, (26) 241.
- Avena—
 - elator—
 - culture under dry-land conditions, (31) 429.
 - germination studies, (28) 327; (29) 143.
 - fatua—
 - eradication, (27) 435.
 - geographical distribution, (26) 334.
 - germination studies, (31) 624.
 - germinative qualities, (29) 135, 538.
 - relation to cultivated oats, (32) 131.
 - studies, (29) 337.
 - flavescens, culture in New Zealand, (29) 428.
 - nuda crosses, inheritance in, (40) 629.
 - seedlings, transmission of light stimuli in, (28) 529.
 - spp., classification, (36) 834.
 - spp., studies, (27) 237.
- Avenarius carbolineum oil as a wood preserva-
tive, (27) 542.
- Averrhoa spp., asexual propagation, (32) 143.
- Avian—
 - cestodes, studies and bibliography, (26) 561.
 - ova, change in rate of growth, (37) 772.
- Avicularia avicularia, notes, (40) 359.
- Aviculture, school of, in Rio de Janeiro, (30) 194.
- Avocado—
 - anthracnose, notes, (27) 750.
 - bark beetle in Hawaii, (34) 59.
 - fungus rot, description, (38) 454.
 - industry, development, (26) 743.
 - membracid, notes, (30) 854.
 - root disease, notes, (27) 445.
 - root rot, notes, (37) 246.
 - tea, recipe, (40) 864.
 - weevil, notes, (28) 357; (39) 264.
- Avocados—
 - analyses, (32) 761; (40) 763.
 - breeding experiments, (37) 142.
 - budded, tests, (36) 537.
 - budding, (32) 143.
 - cold storage of, (32) 439.
 - composition and nutritive value, (33) 362.
 - crown gall affecting, (28) 447.
 - culture, (33) 342; (35) 542; (38) 541.
 - culture—
 - and marketing, (26) 841.
 - and uses, (30) 144.
 - experiments, (27) 142; (32) 742; (37) 144; (40) 339.
 - in Florida, (36) 642.
 - Florida and West Indies, (37) 144.
 - Hawaii, (26) 441.
 - Philippines, (34) 635.
 - fertilizer experiments, (36) 642.

Avocados—Continued.

- freezing-point lowering in cell sap, (36) 343.
 - fungus disease affecting, (26) 841.
 - heat injury, (39) 151.
 - history in California, (36) 641.
 - host plant of fruit fly, (26) 758.
 - imported, for California, (30) 740.
 - improvement, (38) 842.
 - insects affecting, (27) 756; (39) 264, 862.
 - Mycosphaerella* n.sp. on, (39) 248.
 - new beetle affecting, (26) 151.
 - new, descriptions, (29) 436, 838.
 - of Mexico, (40) 246, 342.
 - oil content, (36) 138.
 - oil of, chemical constants, (40) 803.
 - papers on, (39) 243.
 - preservation in salt water, (32) 451.
 - propagation, (26) 336; (35) 539.
 - propagation and grafting, (29) 234.
 - recipes, (28) 660, 863.
 - studies, (28) 437.
 - top-working, (30) 839.
 - varietal standardization, (35) 537.
 - varieties, (34) 835; (35) 445; (36) 641; (37) 144, 243.
 - varieties for California, (37) 345.
 - varieties for Florida, (37) 345.
 - variety, new, (40) 151.
 - Avondale Forestry Station, report, (30) 45.
 - Axonopus semialatus*, notes, (26) 361.
 - Ayres, B., biographical sketch, (40) 199.
 - Azalea—
 - indica*, diseases and pests of, (30) 247.
 - indica*, leaf gall affecting, (29) 48.
 - lace bug, *see* *Stephanitis pyrioides*.
 - leaf skeletonizer, notes, (33) 252.
 - occidentalis*, description, (39) 386.
 - Azaleas, handbook, (26) 337.
 - Azo dyes—
 - purification, (40) 808.
 - use against tuberculosis, (33) 481.
 - Azoa, notes, (27) 52.
 - Azoehis gripusalis*, notes, (26) 147; (28) 858; (30) 454.
 - Azomid, assimilation by plants, (26) 32.
 - Azolla, assimilation of nitrogen by, (29) 133.
 - Azotobacter—
 - activity in relation to soil condition, (34) 813.
 - as affected by carbon disulphid and toluol, (40) 513.
 - beyerincki, notes, (28) 721.
 - chroococcum—
 - as affected by ultraviolet rays, (29) 130.
 - biology and taxonomy, (27) 424.
 - composition of cells, (31) 121.
 - cytological studies, (33) 329.
 - development as affected by radioactivity, (28) 731.
 - growth in bacterized peat, (31) 826.
 - in Java soils, (30) 218.
 - in Russian soils, (38) 428.
 - nitrogen assimilation by, (33) 427.
 - nitrogen fixation by, (27) 517; (38) 427.
 - pigment of, (32) 96.
 - review of investigations, (38) 426.
 - sources of energy for, (28) 323.
 - studies, (28) 524.
 - cultures, effect on growth of crops, (28) 814.
 - development, (37) 221.
 - growth, (27) 828.
 - in Danish forest soils, (34) 814.
 - Hawaiian soils, (36) 215.
 - Indian soils, (31) 731.
 - limed cranberry soils, (40) 214.
 - soils of foreign countries, (35) 320.
 - media for, (35) 226.
 - morphological and cultural studies, (32) 33.
 - nitrate production by, (31) 421.
 - nitrogen fixation by, (29) 227; (32) 29, 515; (33) 823; (34) 422; (37) 129.
 - nitrogen release by, (34) 627.
 - soil inoculation with, (40) 617, 832.
 - spp., nutrient medium for, (27) 729.
 - stimulation by poisonous substances, (27) 131.
 - studies, (29) 630; (39) 619, 722, 723.
 - symbiosis with water plants, (38) 419.
 - symbiotic relation with algae, (40) 130.
- Azotogen—
 - inoculation experiments with, (40) 823.
 - notes, (26) 723; (27) 322.
 - tests, (26) 521, 617; (29) 733; (32) 433.

Azoturia in horses, prevention, (26) 75.

Azotus—

- chionaspidis* n.sp., description, (31) 459.
- marshi, notes, (27) 556.

Babcock—

- glassware, examination, (30) 178, 664.
- glassware, testing, (33) 383.
- test—
 - bottles, calibration, (31) 875.
 - directions, (27) 375; (32) 870, 871.
 - effect on dairy industry, (27) 283.
 - error in, (26) 371; (27) 500; (28) 207.
 - in schools, (26) 393.
 - modified, for ice cream, (31) 210.
 - modified, notes, (27) 499.
 - notes, (28) 473; (30) 576, 875; (31) 873; (33) 383; (36) 674.
 - sampling for, (30) 274.
 - studies, (30) 810.
 - use, (33) 676; (37) 175, 875.
- tester, use, (29) 71.

Babesia—

bigemia—

- in cattle in Panama, (39) 84.
- notes, (27) 784.
- relation to anaplasmosis, (29) 584.
- studies, (29) 882.
- bovis in Netherlands, (40) 587.
- caballi, description, (31) 382.
- canis, culture in vitro, (30) 481.

Babesiosis—

- and anaplasmosis, differentiation, (26) 584.
- canine, in Porto Rico, (31) 781.
- in Australia, (30) 82.
- in Yucatan, (27) 782.
- status and control, (37) 480.
- transmission by ticks, (29) 584.

Babul—

- beetles affecting, (27) 863.
- Pods, analyses, (27) 469.
- tree, description, (38) 45.

Baby beef, *see* Beef, baby.

Baccha—

- clavata, notes, (29) 355.
- lemur, notes, (29) 455.

Bacilli—

acid-fast—

- differentiation, (31) 478.
- in feces of vertebrates, (31) 875.
- in lungs of camels, (30) 679.
- in milk, (31) 584.
- Bang-Stribolt, notes, (28) 480.
- Gaertner group, in animals, (39) 389, 488.
- Gaertner group, in rats and mice, (30) 355.
- nonlactose-fermenting, in flies, (30) 757.
- paratyphoid and pestifer, agglutination, (27) 888.
- pathogenic, detection in water and sewage, (38) 188.
- pathogenic, disinfection by cinchona alkaloids, (40) 478.

Bacillosis, paracolon, in calves, (33) 182.

Bacillus—

abortus—

- and related bacteria, studies, (40) 184.
- biology, (27) 885; (31) 182.
- characteristics, (29) 779.
- cultivation, (40) 479.
- detection in animals, (33) 278.
- detection in milk, (34) 679.
- gas production by, (35) 785.
- in arthritis of colts, (31) 887.
- blood and milk of affected animals, (33) 679.
- certified milk, (37) 881.
- milk, (29) 282, 305, 500, 778; (31) 79; (32) 674, 677; (33) 679, 774, 875; (38) 286.
- swine, (36) 483.
- inoculation of cattle with, (29) 779.
- isolating and recovering (40) 479.
- lipolyticus in milk, (37) 173.
- lipolyticus, notes, (36) 882.
- massive cultures of, (37) 687.
- notes, (29) 779; (30) 586.
- pathogenesis, (27) 477.
- pathogenic action of, (26) 586.
- pathogenicity, (40) 383.
- pathogenicity for human beings, (36) 277.
- peptotoxin production by, (30) 280.
- persistence in inoculated animals, (29) 282.

Bacillus—Continued.

- abortus—continued.
 - relation to abortion in sheep, (30) 684.
 - relation to abortion in women, (37) 78.
 - relation to joint-ill, (39) 892.
 - studies, (29) 80; (33) 879; (36) 780; (39) 83, 289, 391.
 - virulence, (29) 677; (35) 885.
- acris n.sp., description, (29) 157.
- acid lactici—
 - in Stilton cheese, (28) 879.
 - variation with respect to gas formation, (30) 180.
- aerogenes capsulatus—
 - in mules, (27) 787.
 - in Washington market milk, (32) 269.
- amaracrylus, dehydration of glycerin by, (35) 164.
- amylobacter on blighted potatoes, (32) 544.
- amylovorus—
 - description, (33) 447.
 - leaf invasions by, (34) 647.
 - longevity, (36) 50.
 - migration in host tissues, (29) 449.
 - notes, (29) 49, 848; (31) 346, 644, 746, 843; (33) 348; (34) 247, 648, 747; (37) 755; (40) 53, 251, 348.
 - pear stocks resistant to, (36) 51.
 - relation to aphids, (34) 452.
 - relation to apple collar rot, (34) 157.
 - studies, (29) 348, 649; (34) 247; (35) 351, 548, 848; (36) 50, 351; (40) 746.
 - transmission by aphids, (37) 151, 157.
 - transmission by bees, (36) 59.
 - treatment, (36) 347.
- anthracis as affected by—
 - serums and leucocytes, (26) 175.
 - ultraviolet rays, (31) 379.
- anthracis—
 - detection in cerebrospinal fluid, (31) 578.
 - effect on sheep, (29) 582.
 - hemolytic powers, (31) 878.
 - notes, (29) 378.
 - spores, resistance to heat, (35) 487.
 - sympatric and allied organisms, gas production by, (36) 880.
 - symptomatic, fermenting capacity, (27) 182.
- apiovorus n.sp., description, (31) 542.
- apiovorus n.sp., notes, (34) 244.
- asteracearum n.sp., description, (27) 547.
- atrosepticus—
 - and B. melanogenes, relation, (39) 148.
 - description, (36) 648.
 - notes, (40) 844.
- aurantinus n.sp., description, (34) 78.
- avisepticus—
 - affecting man, (39) 186.
 - studies, (40) 685, 882.
 - toxins of, (39) 892.
 - var. in fowls, (32) 783.
- baccarinii, organism resembling, (30) 353.
- bipolaris septicus, (40) 183.
- bipolaris vars., notes, (28) 281.
- bombycis, relation to septicemia in silkworms, (30) 54.
- botulinus—
 - development in corn and apricots, (37) 165.
 - development in vegetable medium, (33) 866.
 - effect of heat on, (40) 558.
 - isolation, (39) 788.
 - relation to forage poisoning, (37) 179; (38) 383, 384; (39) 387.
 - studies, (40) 176.
- bovissepticus, notes, (28) 284.
- Bridre-Sivori, affecting pigs, (40) 683.
- bronchicanis, studies, (27) 187.
- bronchisepticus—
 - filterability, (33) 483.
 - lesions produced by, (34) 480.
 - notes, (27) 782; (30) 579.
 - relation to dog distemper, (28) 682; (29) 682.
 - studies, (31) 479; (39) 289.
- bulgaricus—
 - as a starter for lacto, (30) 61.
 - dried cultures of, (31) 773.
 - effect on milk, (39) 486.
 - effect on typhoid bacillus in milk, (27) 176.
 - in Emmental cheese, (31) 477.

Bacillus—Continued.

- bulgaricus—continued.
 - organisms in commercial preparations, (33) 875.
 - tests of strains, (34) 574.
 - use in cheese making, (31) 772; (32) 776.
 - variability of, (31) 175.
- burgeri n.sp., description, (35) 454.
- capsici n.sp., studies, (40) 157.
- carotovorus, notes, (31) 641; (35) 750; (40) 844.
- casei flans, notes, (28) 879.
- casei proteolyticus, development in cheese, (20) 881.
- chauvaui affecting hogs, (34) 479.
- cholerae suis—
 - in Dorset-Niles serum, (29) 82.
 - notes, (26) 785.
 - studies, (39) 587.
- citrinaculans n.sp., description, (38) 552.
- cloacae on green vegetables, (40) 658.
- coagulans n.sp., description, (34) 78.
- coli—
 - as affected by acids, (40) 881.
 - as test organism for disinfectants, (29) 803.
 - causing broncho-pneumonia in calves, (39) 290.
- coli communis—
 - action on glucose and mannitol in presence of peptone, (38) 709.
 - in milk, (32) 577.
 - in swine, (40) 784.
 - in water supplies, (31) 718.
 - organism resembling, in condensed milk, (26) 81.
 - relation to broncho-pneumonia, (36) 384.
 - survival of pasteurization by, (37) 775.
- coli—
 - destruction by electricity, (35) 176.
 - detection in water, (28) 509.
 - determination in ice cream, (32) 415; (34) 165.
 - determination in water, (35) 287; (37) 188.
 - Endo medium as a test for, (34) 167.
 - freezing, (40) 181.
 - from horse, cow, and man, (36) 379.
 - hydrogen-ion concentration by, (34) 524.
 - importance in judgment of water, (34) 389.
 - in butter, (31) 576.
 - eggs, (27) 61; (31) 571.
 - fresh and decomposing manure, (39) 23.
 - milk, (40) 376.
 - milk, significance, (37) 874.
 - itinerary in butter manufacture, (39) 78.
 - longevity, (26) 781; (38) 389, 488.
 - notes, (26) 846; (27) 751; (38) 354.
 - on coconut palm, (34) 241.
 - on green vegetables, (40) 658.
 - relation to coconut bud rot, (34) 442; (35) 353, 850.
 - relation to diarrhea in calves, (26) 381.
 - relation to slime formation in soils, (29) 723.
 - thermal death point, (39) 78.
- cuniculicida, isolation from house fly, (38) 362.
- cyanogenes, relation to blue milk, (32) 775.
- cyripedii n.sp., description, (26) 650.
- delbruecki, use in bread making, (33) 864.
- de Loutraz, studies, (40) 552.
- dianthi (?) on sugar beets, (33) 743.
- diphtheriae, destruction by periodol, (39) 80.
- dysenteriae—
 - as affected by metamorphosis of house flies, (29) 357.
 - destruction by periodol, (39) 80.
- enteritidis—
 - accidental infection by, (36) 350.
 - as a cause of infectious diarrhea in calves, (35) 488.
 - occurrence in calves, (27) 289.
 - relation to croupous enteritis in cattle, (28) 886.
 - spontaneous occurrence in mice, (26) 176.
 - studies, (33) 178.
- erysipelas, detection after vaccinating, (29) 176.
- erysipelas suis—
 - effect of mixed and secondary infection in, (26) 185.
 - heat resistance of precipitinogens, (29) 882.
 - studies, (27) 384.
 - types, (29) 882.

Bacillus—Continued.

- erysipelatis, toxins contained in, (28) 676.
 extorquens—
 decomposition of silicates by, (31) 121.
 n.sp., notes, (29) 316.
 faecalis alkaligenes, studies, (31) 479.
 farnetianus n.sp., description, (26) 851; (40) 159.
 fluorescens liquifaciens, notes, (28) 473.
 gallinarum, studies, (40) 685.
 gangraenae emphysematosae, notes, (31) 579.
 gortynae, notes, (30) 551.
 gummificans, notes, (28) 651.
 histolyticus, biochemistry, (39) 887.
 hoplosternus n.sp., description, (38) 162.
 ichthyosmius n.sp., description, (37) 686.
 ixiae n.sp., studies, (29) 845.
 Koch's, method of entering the body, (29) 884.
 lactis acidi, studies, (40) 377.
 lactis erythrogenes, effect on milk, (26) 775; (30) 411.
 lactis fermentans, studies, (29) 776.
 lactis viscosus, notes, (27) 474.
 lathyr—
 n.sp., relation to sweet pea streak disease, (29) 352.
 relation to sweet pea streak disease, (32) 446.
 studies, (33) 547; (37) 155.
 levans, notes, (26) 563.
 liparis parasitizing gipsy moth, (38) 159.
 lipolyticus—
 pathogenicity, (39) 289.
 studies, (40) 184.
 lymantriae—
 destructive to gipsy moth, (30) 54.
 parasitizing gipsy moth, (38) 159.
 lymphangiticus, notes, (34) 478.
 mallei—
 as affected by calcium hypochlorite, (40) 478.
 morphology and biology, (31) 579.
 notes, (28) 887.
 mangiferae n.sp., description, (34) 447.
 manihotis, notes, (35) 245.
 megatherium, aerotropic growths, (27) 829.
 melanogenes—
 notes, (27) 446; (32) 239, 544.
 treatment, (20) 549.
 melitensis—see also *Bacterium melitense*, and *Micrococcus melitensis*.
 studies, (39) 289.
 melonitiae—
 relation to septicemia in cockchafers, (30) 54.
 studies, (38) 162.
 melonis as affected by cold, (34) 538.
 minimus mammae, hygienic importance, (33) 175.
 Morgan's, in flies, (30) 757.
 morulans—
 n.sp., description, (38) 250.
 nitrate reduction by, (37) 543.
 musae, description, (31) 745.
 musae, notes, (28) 345; (27) 50, 449.
 mycoides, notes, (26) 747.
 n.spp., descriptions, (26) 581; (28) 628.
 n.spp. in Brindza cheese, (33) 278.
 n.spp. on orchids, descriptions, (40) 159.
 necrophorus—see also *Necrobacillus*.
 affecting cattle, (30) 884.
 diseases, pathology, (39) 590.
 in swine, (40) 784.
 notes, (28) 285; (33) 774.
 necrosis—
 lesions, (39) 683.
 organism resembling in rabbits, (29) 677.
 nicotianae and *B. solanacearum*, identity, (30) 541.
 oedematis maligni, notes, (39) 890.
 oedematous, pathogenicity, (37) 377.
 of Group IV, studies, (31) 479.
 of Schmorl, studies, (28) 676; (29) 478.
 oleae, treatment (27) 251.
 omnivorus, notes, (40) 844.
 ovisepticus, studies, (38) 887.
 paratuberculosis, notes, (30) 583.
 paratyphoid equine, studies, (39) 492.
 paratyphoid-like, from a dog, (26) 290.
 paratyphosus B—
 anomalous strain of, (32) 678.
 food poisoning by, (34) 563.

Bacillus—Continued.

- paratyphosus B—continued.
 in pigeons, (34) 83.
 in swine, (40) 784.
 notes, (30) 786.
 studies, (33) 178.
 paratyphosus—
 relation to abortion in mares, (31) 381.
 studies, (39) 687.
 perfringens—
 notes, (39) 890.
 studies, (38) 503, 504.
 pertussis, lesions produced by, (34) 480.
 pestis, development in bedbugs, (33) 747.
 pestis, longevity in fleas, (33) 749.
 petroselin n.sp., description, (35) 454.
 phlei, notes, (28) 481.
 phytophthorus—
 notes, (31) 641; (40) 847.
 studies, (39) 456.
 pollaci n.sp., description, (26) 851; (40) 159.
 poncei n.form, description, (40) 164.
 Preisz-Nocardi—
 diagnostic value, (29) 281.
 from equine, bovine, and ovine abscesses, (35) 574.
 notes, (28) 182, 782.
 prodigiosus—
 destruction of paraffin by, (32) 523.
 notes, (28) 241.
 relation to rubber spotting, (29) 451.
 proteus vulgaris, notes, (29) 64.
 pseudopyogenes lactis in milk, (33) 115.
 pseudotuberculosis, death rate as affected by temperature changes, (40) 313.
 pullorum, relation to fowl typhoid bacillus, (32) 478.
 pyocyaneus—
 effect on denitrification, (27) 424.
 in pupae and imagines of infected house flies, (26) 61.
 in swine, (40) 784.
 respiration, (31) 827.
 pyogenes—
 affecting pigs, (30) 484.
 relation to contagious abortion, (29) 80.
 relation to eye disease in cattle, (37) 691.
 suppuration due to, (37) 276; (38) 585.
 pyramides I and II, notes, (30) 551.
 radiclea—see also *Nodule bacteria*.
 cultures, preparation, (39) 723.
 fixation of nitrogen by, (29) 629, 733.
 groups of, (33) 823.
 growth as affected by hydrogen-ion concentration, (39) 26.
 in soils, (29) 423, 515.
 isolation from soils, (32) 727; (33) 121.
 nitrogen assimilation by, (33) 426.
 notes, (26) 521; (39) 338.
 of field peas, (39) 329.
 of soy beans, studies, (33) 134; (36) 848.
 specialization of forms, (29) 733.
 studies, (32) 33, 727; (35) 729; (39) 116.
 testing cultures of, (29) 30.
 radiobacter in vaua soils, (30) 218.
 Reading, in wounds, (40) 679.
 rhisopathiae suis, relation to polyarthritis in sheep, (31) 236.
 saccharalis n.sp., description, (35) 505.
 savastanoi, notes, (30) 751.
 septicemiae ranarum n.spp., notes, (30) 851.
 septicus insectorum, notes, (32) 62.
 smegmatis, acid-proofness of strains, (38) 485.
 solanacearum—see also *Bacterium solanacearum*.
 description and treatment, (29) 847.
 notes, (26) 649; (27) 854; (28) 243, 446; (29) 423; (30) 48, 749, 847; (31) 127; (32) 50, 239; (39) 550, 551; (40) 348.
 studies, (27) 650.
 variability, (29) 136.
 virulence against *Nicotiana*, (33) 446.
 solaniperda, notes, (26) 846.
 solanisaprus, notes, (36) 250.
 sorghi (?) on Sudan grass, (33) 851.
 sotto—
 B. alvei, and *B. megaterium*, identity, (36) 380.
 studies, (37) 853.
 toxin of, (38) 466.

Bacillus—Continued.

- sp. affecting garlic, (30) 449.
- spongiosus, notes, (28) 746.
- sporogenes—
 - as an indicator of manurial pollution in milk, (34) 272.
 - biochemistry, (38) 483.
 - detection in milk and water, (33) 875.
 - studies, (38) 503, 504.
- spp., absorption in intestinal canal, (28) 882.
- spp., ammonifying power, (31) 317.
- spp., distribution by flies, (28) 756.
- spp., notes, (26) 847, 880.
- spp., occurrence in sugar, (26) 505.
- spp., on vegetables in Ontario, (37) 150.
- spp., physiological studies, (27) 226.
- spp., production of toxins by, (26) 184.
- spp., relation to—
 - foul brood of bees, (27) 563.
 - white scours in calves, (26) 286.
- subtilis—
 - in condensed milk, (29) 778.
 - in conjunctival sac of horses and bovines, (26) 176.
 - isolation from cheese, (26) 479.
 - potassium requirements, (39) 619.
 - proteolytic activity, (35) 204.
 - role in utilization of organic compounds by plants, (37) 223.
- suisepeticus—
 - effect on rabbits, (29) 288.
 - immunity of rabbits to, (26) 184.
- suisetifer—
 - agglutinins for, in hog cholera serum, (36) 280.
 - notes, (28) 183; (40) 783.
 - studies, (39) 188.
 - voldagsen, notes, (29) 883.
- suisepeticus—*see also* Bacterium suisepeticus.
- significance in hog cholera, (31) 680.
- synxanthus in milk, (34) 78.
- tabificans—
 - description and treatment, (28) 847.
 - notes, (30) 47.
 - treatment, (31) 243.
- tetani, studies, (39) 389.
- thuringiensis n.sp., notes, (35) 253.
- tracheiphilus—
 - notes and treatment, (28) 746.
 - studies, (27) 45; (36) 249.
 - transmission by insects, (35) 546.
- tuberculosis, *see* Tubercle bacilli.
- tuberculosis ovis, notes, (28) 182.
- tubifex n.sp., description, (26) 847.
- typhi-exanthematici, isolation from body louse, (37) 850.
- typhi gallinarum alcalifaciens—
 - biochemical and agglutinating properties, (38) 788.
 - studies, (30) 385.
- typhi suis as a cause of meat poisoning, (32) 84.
- typhosus—
 - as affected by metamorphosis of house flies, (29) 358.
 - as test organism for disinfectants, (29) 803.
 - culture media for, (40) 677.
 - destruction by periodol, (39) 80.
 - destruction in sour milk, (40) 476.
 - longevity in water, (38) 488.
 - occurrence on vegetables, (26) 661.
 - persistence in pupae and imagines of house flies, (26) 251.
 - vaccines, studies, (40) 286.
 - viability in ice cream, (34) 256.
 - viability in milk, (26) 776.
- viscosus-panis, studies, (40) 360.
- voldagsen—
 - and B. suisetifer, relationship, (31) 87.
 - as cause of meat poisoning, (32) 84.
 - notes, (31) 680.
 - organism resembling, in man, (29) 882, 883.
 - relation to hog cholera, (28) 183; (29) 482; (32) 83.
- vulgar, penetration of egg shells by, (29) 765.
- welchii—
 - and blackleg bacillus, resemblance, (38) 587.
 - antitoxin for, (38) 379.
 - cultures, hemolysis, (39) 580.
 - in butter, (31) 576.
 - in pigeons, immunization, (37) 781.
 - studies, (38) 483, 503, 504.

Bacillus—Continued.

- welchii—continued.
 - toxin, action of antiseptics on, (39) 185.
 - toxins of, (38) 378, 584, 783.
- Bacon—
 - black pigment areas in, (35) 376.
 - curing and marketing, (29) 773.
 - curing, cooperative, in England, (27) 676.
 - curing on the farm, (27) 279; (30) 316, 373.
 - factories, cooperative—
 - in Denmark, (27) 590.
 - in Victoria, (27) 373.
 - industry in New South Wales, (28) 874.
 - price in England, (38) 90.
 - wrapped cured, inspection in Texas, (29) 61.
- Bacteria—
 - absorption in intestinal canal, (28) 882.
 - absorption of congo red by, (29) 528.
 - acid agglutination, (27) 384.
 - acid-fast, anaphylaxis from, (30) 481.
 - acid-fast, studies, (33) 769.
 - acid-remnet, in udder of cows, (33) 175.
 - action of blood from different species on, (40) 236.
 - action of dyes on, (39) 412.
 - activity during infection, (26) 174.
 - activity in forest soils, (29) 325.
 - aerobic spore-bearing nonpathogenic, studies, (35) 378.
 - agglutinating, biochemical activity, (38) 181.
 - anaerobic, *see* Anaerobes.
 - and algae, symbiosis, (28) 31.
 - and plants, symbiosis between, (36) 632.
 - and tropical plants, symbiosis, (28) 35.
 - as affected by—
 - cold, (34) 538.
 - freezing, (40) 180.
 - illuminating gas, (39) 632.
 - metamorphosis of house flies, (29) 357.
 - pressure, (38) 584.
 - radioactive minerals, (27) 826.
 - radioactivity, (30) 524.
 - radium emanations, (31) 821.
 - spices, (35) 557; (38) 469.
 - sterilized soils, (28) 324.
 - tobacco smoke and methyl iodide vapor, (39) 527.
 - ultraviolet rays, (26) 431; (36) 526.
 - volatile conifer products, (32) 618.
 - as an index to age of butter, (31) 576.
 - as cause of strawberry-like odor in milk, (26) 371.
 - Bulgarian group, morphology and biochemistry, (35) 10.
 - butyric-acid-forming, in spoiled flour, (26) 68.
 - carbohydrate decomposing, detection in soils, (31) 313.
 - cellulose-destroying, characteristics, (29) 817.
 - cellulose-digesting, isolation, (31) 827.
 - changes in the animal body, (34) 877.
 - chemical action of, (30) 10.
 - chemistry of, (32) 78.
 - chitin and cellulose in, (36) 501.
 - classification, (26) 276; (37) 220, 819.
 - classification and nomenclature, (40) 521.
 - coli-aerogenes, differentiation, (34) 136; (37) 506.
 - coli group, selective action of media on, (27) 177.
 - coli group, variation, (27) 177.
 - colon type—
 - in bovine feces, (32) 175.
 - in oat hay, (36) 280, 580.
 - in surface water, (36) 284.
 - on grains, (33) 631.
 - colon-typhoid, affecting birds, (40) 685.
 - counting, (33) 82.
 - counting in tomato products, (39) 13.
 - cultures, tests, (32) 320.
 - death rates as affected by temperature changes, (40) 313.
 - decomposition of silicates by, (29) 316.
 - denitrifying, physiology, (27) 424.
 - denitrifying sulphur, physiology, (28) 35.
 - destruction—
 - by leucocytes, (27) 882.
 - in milk, (28) 675.
 - of cellulose by, (26) 825; (28) 627.
 - of mice and rats by, (26) 579.
 - of paraffin by, (32) 523.
 - with hydrocyanic acid gas, (35) 53.
 - determination in—
 - cream, (34) 612.
 - ice cream, (34) 165; (38) 75.
 - meat, (31) 854.

Bacteria—Continued.
 development as affected by radioactivity, (28) 731.
 diastase and invertase activity, (36) 31.
 dissemination by flies, (27) 58; (28) 356; (30) 658.
 dissemination by roaches, (30) 156.
 distribution by cream separators, (32) 268.
 distribution in New York soils, (26) 719.
 effect on—
 availability of phosphates, (28) 815.
 catalase production in milk, (29) 717.
 cycle of hog cholera, (31) 680.
 fermentation of tea, (32) 111.
 grain size and moisture content of soils, (29) 20.
 milk held at low temperature, (31) 373.
 nitrogen content of soils, (31) 731.
 phosphoric acid in soils, (26) 817; (31) 721.
 sewage, (34) 591.
 soil phosphorus, (36) 515.
 solubility of potash and phosphoric acid, (29) 315.
 soluble phosphorus of manures, (26) 723.
 fat splitting by, (26) 370.
 fecal, determination, (26) 161.
 formation of—
 calcium carbonate by, (26) 618.
 creatinin by, (33) 725.
 gas-producing, detection, (34) 732.
 gas-producing, in milk, (26) 576.
 gas production by, in raw and pasteurized milk, (37) 874.
 green fluorescent, of maple sap, (26) 825.
 growth in—
 arsenic solutions, (35) 281.
 protein-free media, (39) 888.
 raw and pasteurized milk, (36) 475.
 sterilized and unsterilized soil decoctions, (28) 329.
 halophytic and lime-precipitating, notes, (33) 630.
 hematoxins and antihematoxins of, (32) 78.
 hemophilic, growth, (39) 668.
 hemorrhagic septicemia group, (40) 685.
 identification, (27) 384.
 immunity of plants to, (33) 740.
 importance in digestive processes, (31) 772.
 in alimentary canal of fleas, survival, (31) 353.
 cheese, studies, (27) 284.
 Don curd, (26) 779.
 flesh of normal slaughterhouse animals, (26) 660.
 house flies, (26) 251.
 intestinal tract of calves, (35) 282.
 milk, *see* Milk.
 muscles, (26) 176.
 normal udders, (27) 280; (28) 275.
 old eggs, (26) 168.
 prepared feeding stuffs, (32) 75.
 soils, *see* Soil bacteria.
 Stilton cheese, (28) 879.
 water, *see* Water.
 intestinal, effect on purins, (33) 263.
 intestinal, relation to diet, (40) 867.
 intracellular digestion, (36) 379.
 invasion of animal parasites by, (28) 681.
 killed by heat, investigations, (31) 183.
 lactic-acid, classification, (28) 75.
 legume—
 and nonlegume plants, symbiosis, (37) 819.
 behavior in acid and alkali media, (37) 422.
 fixation of nitrogen by, (29) 629.
 life cycles, (35) 728.
 limitation of in soils, (29) 122.
 lipolytic power on esters and fats, (29) 177.
 micro-calorimeter for, (30) 66.
 microscopic examination, (32) 578.
 morphology and physiology, (26) 276.
 nitrate-reducing, (27) 226; (31) 324.
 nitrifying—
 action of oligodynamic elements on, (33) 422.
 in sand cultures, (27) 634.
 role in decomposition of manure, (35) 426.
 nitrogen collecting, handbook, (29) 824.
 nitrogen-fixing—
 action of oligodynamic elements on, (38) 428.
 as affected by manganese, (33) 820.
 in Rubiaceae leaves, (27) 225.
 of manure, (38) 27.
 physiology and biology, (38) 426, 427.

Bacteria—Continued.
 nitrogen-fixing—continued.
 potash requirements, (27) 222.
 preparation, (32) 433.
 nitrogen metabolism, (39) 110.
 nodule—
 as affected by manganese, (34) 31.
 as affected by phosphorus, (37) 828.
 classification, (32) 33.
 for legumes, (35) 322.
 forms of, (32) 327.
 of Leguminosae, (32) 727.
 physiological studies, (32) 727.
 relationships among, (33) 823.
 studies, (36) 517.
 testing cultures of, (29) 30.
 nomenclature and classification, (39) 124, 823.
 of enteritidis group, variability, (26) 780.
 fresh and decomposing manure, (39) 28.
 infectious diseases, (40) 180, 284.
 root nodules of legumes, (26) 824.
 udder and genital organs of the cow, (39) 388.
 on green vegetables, (40) 658.
 oxidation of manganese by, (32) 514.
 parasitic on *Elodea* leaves, (26) 552.
 paratyphoid-enteritidis—
 cause of fish poisoning, (34) 459.
 differentiation, (38) 284.
 studies, (37) 275, 690, 781.
 pathogenic—
 conservation by flies, (30) 552.
 in candy, (34) 365.
 review of investigations, (28) 178.
 textbook, (28) 78.
 persistence and vitality on alfalfa seed, (26) 820.
 production of—
 humus by, (38) 329.
 hydrocyanic acid by, (30) 802.
 proteolytic, of man and animals, (26) 581.
 pure-line concept, (36) 826.
 purple sulphur, physiology of, (31) 32.
 reducing and oxidizing properties of, detection, (26) 204.
 relation to—
 beet blight, (34) 350.
 callose in root hairs, (29) 326.
 citrus gummosis, (29) 247.
 coagulation of latex, (38) 331.
 coconut bud rot, (27) 847.
 humus and fertilizers, (28) 727.
 iodin compounds, (29) 133.
 organic soil constituents, (29) 817.
 plant diseases, (27) 44; (31) 745.
 soils, (27) 728.
 wilt diseases, (29) 243.
 resistance to—
 disinfectants, (26) 478.
 germicides, (36) 177; (37) 176.
 respiration in soils, (27) 122.
 review of investigations, (30) 11.
 rôle in—
 cheese ripening, (27) 74; (31) 477.
 reducing wine acidity, (35) 113.
 silage fermentation, (36) 802.
 soil fertility, determination, (26) 123.
 root tubercle, specialization of forms, (29) 733.
 saprophytic, relation to animal life, (28) 570.
 sensitized and nonsensitized, immunization with, (37) 780.
 serum-grown, use in producing immune serum, (35) 679.
 sewage, relation to shellfish pollution, (27) 212.
 slime-forming, in milk, (29) 580.
 spore-forming—
 function in soils, (35) 523.
 in soils, (36) 517.
 of the apiary, (37) 59.
 staining, inhibitory action of serum, (37) 478.
 stimulation by poisonous substances, (27) 131.
 storage of oxygen by, (28) 329.
 studies, (27) 750.
 sulphur, physiology, (28) 728.
 sulphur, physiology and distribution, (33) 23.
 surviving pasteurization, (29) 73; (32) 775.
 symbiosis—
 in Rubiaceae, (32) 327.
 with *Ardisia crispa*, (29) 30.
 with plants, (26) 545.
 treatise, (27) 575; (29) 422; (31) 80.
 use against field mice, (31) 57.

Bacteria—Continued.

- use of stains in study of, (29) 630.
- variation in, (32) 220.
- viability in water, (38) 488.
- viability of, (26) 819.
- yeasts, and molds, treatise, (27) 727.
- Bacterial—**
 - antiferments, nature of, (35) 382.
 - antigens, dried, (40) 678.
 - antigens, preparation, (40) 478.
 - cells, treatise, (27) 476; (28) 425.
 - cultures, commercial, tests, (27) 31.
 - cultures, mass, on solid media, (40) 805.
 - cultures, system of, notes, (40) 881.
 - diseases as affected by Roentgen rays, (38) 481.
 - diseases in rats, (27) 754.
 - emulsions, determination of turbidity, (37) 14.
 - infections, chemotherapy, (37) 274.
 - infections, insect carriers of, (30) 153.
 - species, recognition, (40) 288.
 - spores, resistance to heat, (35) 487.
 - tubercles in leaves, (29) 30.
 - vaccine therapy, studies, (30) 779.
 - vaccines, standardization, (30) 780.
 - viruses, inefficiency, (27) 754.
- Bactericidal tests in vitro, (37) 274.**
- Bacterin therapy, notes, (32) 79.**
- Bacterins—**
 - nature and use, (26) 580.
 - polyvalent, use, (30) 180.
 - use in treatment of wounds, (26) 580; (27) 576.
- Bacteriocatalysis, studies, (39) 388.**
- Bacteriological—**
 - bouillons, analyses, (40) 310.
 - counts, agar v. gelatin plates in, (35) 525.
 - counts, limit of colonies in, (35) 525.
 - culture media, *see* Culture media.
 - institute at Bern-Liebefeld, report, (28) 372.
 - standard for ice creams, (28) 166.
 - studies of nitrogen fixation, (26) 521.
 - tests in soils and manure, (26) 322.
 - tests of methods of cleaning, (30) 390.
- Bacteriologists, American, Society of, (26) 575.**
- Bacteriology—**
 - agricultural—
 - in Italy, (39) 99.
 - laboratory manual, (27) 423.
 - progress in, (28) 523.
 - treatise, (27) 329; (30) 631; (35) 328; (39) 430.
 - application to dairy industry, (33) 277.
 - applied, treatise, (40) 577.
 - bibliography, (29) 626.
 - dairy—
 - handbook, (27) 74.
 - investigations, (27) 376.
 - treatise, (30) 378, 677; (32) 577.
 - exercises in, (31) 376.
 - experimental, textbook, (27) 76.
 - household, textbook, (29) 298.
 - hydrogen-ion concentration in, (37) 506.
 - in plant pathology, (39) 247.
 - index catalogue, (32) 578.
 - international catalogue, (28) 34; (35) 574; (39) 190.
 - laboratory guide, (28) 332.
 - manual, (32) 33.
 - methods of pure culture study in, (39) 9, 828.
 - of blood, (27) 284.
 - blue milk, (32) 775.
 - bubble fountains, (35) 860.
 - canned foods, (40) 764.
 - Cheddar cheese, (28) 78.
 - cream ripening, (34) 672.
 - dried soils, (29) 325.
 - eggs, (27) 374; (31) 171; (33) 764.
 - eggs and egg products, (27) 61; (28) 164.
 - fermentation and putrefaction, (28) 563.
 - food, (29) 563; (32) 558.
 - food and water, treatise, (32) 311.
 - ice cream, (34) 165.
 - microsporidiosis in bees, (27) 459.
 - milk, (29) 775.
 - paper dishes, (32) 856.
 - sausage and similar goods, (32) 252.
 - soils, (33) 513, 823.
 - soils, laboratory manual, (33) 791.
 - sugar cane products, (32) 22.
 - water, treatise, (29) 814.
- papers on, (29) 676.
- papers on, from Rockefeller Institute, (33) 279.

Bacteriology—Continued.

- review of literature, (27) 77.
- soil—
 - course in, (28) 332.
 - laboratory guide, (27) 728.
 - notes, (27) 516, 621.
 - studies, (27) 517, 720.
 - treatise, (28) 34.
 - studies, (31) 277.
 - textbook, (32) 371; (36) 130; (39) 283.
 - treatise, (26) 174, 276, 882; (28) 675; (31) 177, 875; (34) 876; (36) 177, 574.
- Bacteriotoxins—**
 - effect on plants, (28) 732.
 - effect on soil organisms, (28) 628.
 - in soils, (35) 626.
- Bacterium—**
 - aerogenes, longevity in water, (38) 488.
 - angulatum n.sp., description, (40) 849.
 - aptatum n.sp., description, (30) 350.
 - astheniae infecting fowls, (39) 291.
 - azophila n.sp., nitrogen fixation by, (38) 27.
 - beticolum—
 - inoculation experiments with, (34) 845.
 - notes, (33) 147.
 - studies, (35) 454.
 - bipolaris septicus, organism resembling, (26) 185.
 - brioslanum n.sp., description, (26) 650; (40) 159.
 - briosil, notes, (29) 246; (30) 450.
 - campestre, studies, (29) 45; (39) 149.
 - casei, studies, (29) 279.
 - castanicolum n.sp., description, (33) 448.
 - castleyae n.sp., description, (26) 851; (40) 159.
 - chromoflavum n.sp., notes, (28) 276.
 - citrarefaciens—
 - n.sp., description, (37) 154.
 - notes, (38) 354; (39) 252.
 - citri, *see* Citrus canker.
 - citriputeale n.sp., description, (29) 650; (30) 652.
 - coli apium n.sp., description, (37) 360.
 - deliense n.sp., notes, (29) 136.
 - droserae, notes, (29) 580.
 - eurydice, relation to foul brood of bees, (27) 563.
 - fluorescens, notes, (26) 846.
 - gintheri, development in fresh and sterilized milk, (32) 75.
 - hartlebi, physiological studies, (27) 226.
 - herbicola rubrum, notes, (27) 313.
 - hyacinthi, studies, (27) 45.
 - hydrogen-oxidizing, in swamp soils, (36) 116.
 - invertens in sugar, (38) 806.
 - krameriani n.sp., description, (26) 851; (40) 159.
 - lachrymans n.sp., description, (34) 443.
 - lactis acid—
 - as affected by other microorganisms in milk, (32) 76.
 - effect on typhoid bacillus in milk, (27) 176.
 - fermenting capacity, (26) 708.
 - fermenting milk with, (39) 486.
 - itinerary in butter manufacture, (39) 78.
 - notes, (27) 474.
 - physiology of, (26) 776.
 - resistance to pasteurization, (33) 675.
 - studies, (28) 276.
 - thermal death point, (39) 78.
 - lactis aerogenes—
 - in bottled milk, (37) 273.
 - notes, (30) 652.
 - lactis album, itinerary in butter manufacture, (39) 78.
 - lactis viscosum, occurrence in soil, (40) 214.
 - maculicolum n.sp., description, (26) 54.
 - mallei, studies, (32) 372.
 - malvacearum—
 - method of infecting cotton, (27) 247.
 - notes, (28) 647; (34) 643; (35) 652; (36) 541.
 - studies, (36) 648.
 - marginale n.sp., description, (39) 455.
 - mathiolae n.sp., description, (27) 851.
 - melitense, notes, (27) 379.
 - melitensis, *see* Micrococcus melitensis and Bacillus melitensis.
 - montemartini n.sp., notes, (26) 845.
 - mori—
 - notes, (27) 50; (34) 649.
 - (?) on beets, (33) 742.
 - studies, (31) 347; (36) 751; (38) 651.

Bacterium—Continued.

- mycoides, proteolytic activity, (40) 721.
- n.sp. on sugar cane, (33) 444.
- n.spp., descriptions, (28) 628; (30) 747.
- n.spp. in Brindza cheese, (33) 278.
- n.spp. on orchids, descriptions, (40) 159.
- nectarophilum n.sp., description, (39) 252.
- of contagious abortion, occurrence in milk, (27) 281.
- oncidii, notes, (26) 650.
- orientale n.sp., description, (26) 779.
- phaseoli—
 - as cause of bean stem disease, (38) 148
 - notes, (31) 542; (37) 840.
 - studies, (28) 846; (39) 354, 455.
- pickensi n.sp., studies, (39) 686.
- pitymysi n.sp., description, (36) 852.
- prodigiosum, injurious to rubber, (28) 552.
- pruni—
 - notes, (40) 638.
 - on peach, (39) 151.
 - studies, (34) 248.
 - treatment, (37) 842.
- (*Pseudomonas*) erodii n.sp., investigations, (32) 53.
- pseudopestis murium—
 - n.sp., notes, (29) 58.
 - role in goiter in rats, (31) 451.
- pseudozoogloeae n.sp., description, (31) 150.
- pullorum—
 - and *B. sanguinarium*, comparative studies, (37) 82, 483.
 - description, (31) 484.
 - fermenting properties, (38) 180.
 - in chicks, (34) 387, 881.
 - eggs, detection, (31) 683.
 - eggs and its significance in food poisoning, (35) 264, 481, 683.
 - fresh eggs, (31) 171.
 - fowls, (38) 889.
 - fowls, detection, (34) 189, 275.
 - fowls, diagnosis, (31) 683.
 - infection, (40) 685.
 - infection, agglutination test for, (34) 784; (39) 791.
 - intradermal test, (36) 884.
 - notes, (28) 887.
 - studies, (38) 281; (40) 882.
- pyogenes in polyarthritis of swine, (36) 280.
- radicicola—*see also* *Bacillus radicicola*.
 - forms of, (32) 727.
 - studies, (36) 517.
- saccharum officinarum n.sp., (35) 317.
- sanguinarium, fermenting properties, (38) 180.
- savastanoi—
 - dissemination, (27) 652.
 - notes, (28) 54.
- sepeponicum, studies, (33) 146.
- solanacearum—*see also* *Bacillus solanacearum*.
 - description, (31) 745.
 - description and treatment, (30) 50.
 - notes, (29) 646; (40) 348.
 - on peanuts, (34) 52.
 - studies, (33) 744; (38) 250.
 - treatment, (38) 50.
 - wild hosts of, (36) 245.
- spp., descriptions, (29) 345.
- spp., effect on denitrification, (27) 424.
- spp. in conjunctival sac of horses and bovines, (26) 176.
- spp., notes, (26) 779, 847, 881; (23) 276; (29) 243.
- stewartii—
 - description, (31) 745.
 - notes, (36) 55.
 - studies, (40) 846.
- suisepticus—*see also* *Bacillus suisepticus*.
 - opsonic power of serums against, (27) 285.
- synyaneum, infection of milk with, (26) 87.
- tabacum—
 - n.sp., notes, (38) 150.
 - studies, (38) 852.
- translucens n.sp., description, (38) 548.
- tularensis—
 - in rabbits, (36) 653.
 - infection of man with, (33) 450.
 - lesions produced by, (34) 580.
 - notes, (26) 461.
 - transmission by flies, (33) 456.

Bacterium—Continued.

- tumefaciens—
 - as affected by X-rays, (39) 453.
 - inoculation experiments, (28) 447; (29) 449; (30) 751.
 - notes, (27) 649; (28) 446, 651; (29) 46, 547; (30) 453; (31) 641; (34) 247, 249, 844; (35) 454; (37) 245, 249, 252; (40) 158, 751.
 - on sugar beets, (33) 147.
 - resistance of *Prunus* to, (36) 352.
 - studies, (36) 541; (38) 648, 852.
 - undescribed pathogenic, in milk, (26) 87; (27) 576.
- vascularum—
 - description, (31) 745.
 - on sugar cane, (39) 551; (40) 157.
 - studies, (33) 852.
- viridilividum—
 - n.sp., studies, (33) 742.
 - treatment, (39) 249.
- viscosum equi n.sp. in foals, (39) 686.
- vitiens n.sp., description, (39) 455.
- xanthochlorum n.sp., notes, (26) 847.
- xanthochlorum, notes, (27) 248.
- Bactrocera—
 - cucurbitae, *see* *Dacus cucurbitae*.
 - spp., danger of introduction, (39) 467.
- Badgers, relation to Rocky Mountain spotted fever, (27) 479.
- Baeus auraticeps n.sp., description, (35) 365.
- Bagasse—
 - as fuel for sugar refineries, (34) 487.
 - as paper making material, (26) 213.
 - bibliography, (27) 717.
 - burning in boiler furnaces, (26) 384.
 - drying experiments, (26) 90.
 - fertilizing value, (35) 337.
 - fuel value, (36) 685.
 - heat of combustion, (27) 717.
 - heat value of, (30) 891.
 - paper, microscopic characteristics, (27) 315.
- Bagniesiella diantherae n.sp., description, (26) 853.
- Bagrada—
 - hilaris in South Africa, (40) 648.
 - picta, notes, (27) 53.
- Bag-shelter caterpillars, injurious to horses, (26) 456.
- Baguisanon, lawaan, culture in Philippines, (30) 230.
- Bagworm—
 - common eastern, notes, (28) 853.
 - control by parasites, (40) 855.
 - fungus disease, studies, (27) 758; (29) 45.
 - injurious to okra, (29) 653.
 - notes, (26) 147; (28) 155, 353; (34) 756.
- Bain, S. M., biographical sketch, (40) 200.
- Bake oven, electric, notes, (34) 460.
- Bakeries—
 - cellar, in Paris, (31) 259.
 - economy and system in, treatise, (26) 762.
 - inspection, (26) 868; (29) 661; (31) 359, 658; (32) 162.
 - inspection in—
 - Indiana, (34) 861.
 - Montana, (33) 67.
 - New York City, (28) 566.
 - North Dakota, (33) 753.
 - Virginia, (29) 567, 766; (31) 462; (32) 661.
 - sanitary standard for, (32) 661.
- Bakerophoma sacchari—
 - n.g. and n.sp., notes, (37) 148.
 - notes, (38) 550.
- Bakers' goods—
 - adulteration and misbranding, (28) 65.
 - examination, (28) 459; (32) 162.
 - methods of analysis, (31) 809.
- Bakers—
 - manual and record book for, (40) 863.
 - training school for, (26) 262.
- Bakery—
 - experimental, work of, (31) 359.
 - products, fermentation losses in, (34) 660.
 - refuse, analyses, (30) 868.
- Bákhár, analyses and preparation, (34) 711
- Baking—
 - army, manual, (37) 63.
 - handbook, (35) 859.
 - industry, (40) 460.
 - leavening agents for, (33) 66.
 - oven temperatures in, (31) 359.

- Baking powder**—
 albumin in, (29) 866.
 alum, use, (26) 564.
 analyses, (33) 461; (36) 662.
 as leavening agents, (33) 66.
 egg albumin in, (32) 356, 762; (36) 561.
 examination, (29) 866; (30) 667; (31) 760; (40) 412, 508, 658, 712.
 notes, (32) 300.
 studies, (35) 802, 860.
- Baking soda**, effect on vitamin content of bread, (36) 465.
- Baking**, temperatures for, (34) 69; (35) 268.
- Bakli**, notes, (29) 443.
- Balance**, automatic, for metabolism experiments, (33) 167.
- Balaninus**—*see also* Chestnut weevils.
 caryae, notes, (38) 762.
 caryae, studies, (38) 157.
 proboscideus, notes, (26) 753.
 spp., notes, (40) 259.
- Balanitis** in sheep, (29) 783.
- Balata**, harvesting and preparation, (27) 542.
- Balclutha punctata**, life history, (35) 553.
- Ball bearings**, history and use, (31) 487.
- Balloon**—
 ascensions, sounding, (27) 316.
 experiments, (31) 213.
- Balloons**—
 use in meteorology, (35) 618.
 use in upper air exploration, (30) 416.
- Balovia cistipennis** n.g. and n.sp., notes, (27) 558.
- Balsa wood**—
 properties, (35) 241.
 survey in Central America, (40) 542.
- Balsam**—
 bark, use for paper specialties, (36) 417.
 Canadian volume tables, (26) 443.
 fir, clearing out, (40) 842.
 fir, growth in Adirondacks, (38) 847.
 fir, reproduction by layering, (28) 344.
 methods of analysis, (27) 205.
 plant louse, *see* *Mindarus abietinus*.
 plants as affected by vaseline oil, (28) 825.
 reproduction, (39) 145.
- Balsamorhiza sagittata**, resin secretion, (39) 224.
- Bamboo**—
 as source of paper pulp, (27) 647; (28) 645.
 borer, notes, (34) 754.
 borer, shot-hole, notes, (29) 458.
 culture experiments, (34) 232.
 disease, description, (36) 251.
 grass, analyses, (30) 565.
 grass as forage crop, (38) 827.
 method of working, (39) 246.
 notes, (29) 330.
 of Andes region of South America, (34) 742.
 Philippine, (40) 745.
 propagation and description, (38) 751.
 scale, soft, in California, (35) 358.
 seed, analyses, (29) 463.
 smut in United States, (36) 653.
 studies, (30) 239.
- Banana**—
 anthracnose, notes, (29) 547.
 blackhead, notes, (40) 750.
 borer, *see* *Cosmopolites sordidus*.
 bread, notes, (26) 260.
 bunches, wrappers for, (29) 234.
 disease—
 in Barbados, (34) 841.
 Cuba, (34) 847.
 Salayer Islands, (37) 556.
 notes, (26) 345; (28) 349, 443, 545, 743; (30) 652, 747; (32) 548, 751, 752.
 studies, (36) 352.
 treatment, (36) 347.
 diseases—
 descriptions, (29) 350; (31) 244; (36) 452.
 in Jamaica, (34) 348; (35) 458.
 notes, (27) 50, 449, 750; (29) 650; (36) 46; (39) 453, 457, 849.
 studies, (38) 848.
 treatment, (29) 749.
 eelworm disease, notes, (40) 750.
 flour, analyses, (26) 260; (39) 870.
 flour, notes, (40) 863.
 food products, manufacture and use, (29) 461.
 fruit fly, danger of introduction, (39) 467.
 fungus disease in Oaxaca and Tabasco, (35) 458.
- Banana**—Continued.
 leaf—
 diseases, notes, (38) 651.
 roller, studies, (26) 857.
 spot disease, notes, (36) 347.
 meal—
 analyses, (34) 256; (40) 173.
 analyses and digestibility, (28) 464.
 as substitute for flour, (33) 361.
 digestibility, (30) 62.
 for pigs, (29) 572.
 moth, biology and remedies, (38) 59.
 Panama disease—
 studies, (37) 843.
 treatment, (35) 153.
 root borer, *see* *Cosmopolites sordidus*.
 root disease, studies, (34) 50.
 rot in India, (35) 458.
 rot, notes, (36) 449.
 skins, analyses, (38) 626.
 stalks, analyses, (38) 626.
 stalks as source of potash, (36) 820.
 starch, studies, (31) 828.
 Trinidad disease, description, (31) 745.
 water lily as a duck food, (30) 545.
 weevil, notes, (36) 158; (37) 161.
 wilt or Panama disease, studies, (38) 757.
- Bananas**—
 acidity, (32) 110; (37) 714.
 analyses, (26) 68; (32) 761.
 analyses and food values, (39) 471.
 and banana flour, composition, (34) 460.
 as food, (26) 563.
 as host of Mediterranean fruit fly, (34) 655.
 ash analyses, (29) 861.
 bacteriological studies, (28) 564.
 bagworm affecting, (26) 857.
 breaking of pseudostems, (27) 143.
 coconut scale affecting, (30) 157.
 commercial products from, (32) 854.
 composition and culinary properties, (32) 253.
 cooking, (26) 260.
 culture, (31) 48; (32) 45; (38) 43; (40) 863.
 culture—
 and uses, (28) 743.
 experiments, (27) 143; (28) 142; (38) 845; (40) 339.
 in Fiji, (29) 642.
 in Guam, (30) 41.
 digestibility, (26) 563.
 dried—
 analyses, (29) 361.
 studies, (34) 256.
 Surinam, food value, (26) 68.
 drying in Hawaii, (39) 208.
 effect on composition of urine, (31) 761.
 fertilizer experiments, (37) 215.
 for livestock, (27) 171.
 fumigating with hydrocyanic acid gas, (29) 234.
 handbook, (30) 741.
 Hua Moa variety, tests, (38) 749.
 insects affecting, (27) 453, 857; (39) 557; (40) 453.
 nematodes affecting, (36) 347.
 notes, (30) 345.
 nutritive value, (36) 863; (39) 872; (40) 67.
 of Hawaii, (38) 541.
 of Philippines, (35) 647.
 origin, (31) 237.
 planting experiments, (30) 841.
 pollination experiments, (31) 535.
 recipes, (28) 660; (30) 165.
 reducing and nonreducing sugars in, (29) 503.
 ripening studies, (28) 565; (29) 462; (32) 455.
 varieties, (27) 842.
 varieties for Philippines, (29) 839.
 varieties in Seychelles, (29) 839.
- Bankers**—
 associations, agricultural committees, (27) 399.
 relation to farmers, (33) 490.
- Banking**—
 reform in United States, treatise, (28) 191.
 system of France, history and development, (28) 294.
- Bankipur Agricultural Experiment Station**, (30) 229
- Banks**, cooperative, organization, (32) 391, 489.
- Banksia integrifolia**, food plant of purple scale, (26) 756.
- Banteng** and zebu, zoological relationship, (34) 466.
- Bantengs**, measurements, (27) 672.
- Baoanusia africana**, n.sp., description, (36) 260.

- Baobab bark, fiber from (37) 534.
 Barbarea barbarea, eradication, (37) 742.
 Barberries, hybridization experiments, (30) 329.
 Barberry—
 Japanese, leaf hopper on, (33) 58.
 pyralid, notes, (26) 855.
 relation to black stem rust of grains, (37) 552.
 relation to grain rust, (26) 142; (30) 149.
 Barbituric acid—
 as precipitant for furfural, (36) 318.
 assimilation by plants, (26) 32.
 Barèges water, sulphur in, (40) 779.
 Baridius orchivora, notes, (40) 754.
 Baris—
 lorata, notes, (27) 54.
 portulacae n.sp., description, (35) 365.
 spp., notes, (30) 357.
 torquatus, notes, (36) 354.
 traegardhi, notes, (27) 53.
 Barit, notes, (26) 361; (30) 230.
 Barium—
 action on Spirogyra, (37) 130.
 arsenate, analyses, (26) 65.
 carbonate as cause of toxicity in flour, (33) 64.
 chlorid—
 absorption by *Aragallus lamberti*, (28) 527.
 action on humus, (39) 514.
 as coagulant for rubber latex, (26) 141.
 dosage, (26) 677.
 detection, (28) 409.
 detection in water, (34) 410.
 effect on—
 guinea pigs, (26) 432.
 nitrogen-fixing bacteria, (38) 428.
 plant growth, (40) 819.
 Spirogyra, (38) 27.
 wheat, (40) 515.
 hydrate, diffusion in soils, (29) 128.
 hydroxid solutions, handling, (36) 805.
 in plants, (30) 502; (38) 409.
 soils, (31) 720.
 tobacco, (31) 715.
 weeds, (26) 432.
 ions, effect on the heart, (27) 780.
 oxid, fixation of nitrogen by, (29) 822.
 phytate, composition, (31) 708.
 polysulphid, fungicidal value, (33) 347.
 removal from brines, (30) 809.
 relation to loco-weed disease, (27) 580.
 salts, effect on—
 activity of lipase, (31) 264.
 nodule production in vetch, (32) 728.
 separation from—
 calcium and magnesium, (26) 204.
 calcium and strontium, (26) 204.
 sulphate as soil disinfectant, (31) 621.
 sulphur, insecticidal value, (34) 61.
 sulphur preparation, tests, (33) 339, 340.
 toxicity toward plants, (30) 128; (38) 628.
 Bark—
 beetle, European, notes, (28) 57.
 beetles—
 identification, (29) 859.
 injurious to rubber, (27) 458.
 injurious to tropical plants, (30) 660.
 nematodes associated with, (33) 750.
 notes, (32) 448, 552; (34) 857.
 of Canada, (38) 163; (40) 552.
 of Japan, (26) 560.
 orchard, studies, (31) 852.
 studies, (28) 561.
 borers killing healthy fir trees, (37) 465.
 ringing, effect on sap descent, (32) 523.
 ringing, effect on trees, (38) 128.
 structure, notes, (27) 347.
 use for paper specialties, (36) 417.
 Barley—
 acidity in, estimation, (40) 611.
 amylase of, studies, (31) 609.
 analyses, (26) 266, 363, 369, 770; (27) 170, 461, 639; (28) 464; (29) 270, 367, 470; (30) 434; (31) 864; (34) 667; (36) 65.
 and oats—
 comparative growth in nutrient solutions, (40) 134.
 comparative yields, (40) 135, 328.
 and peas as hay crop, (39) 333.
 and wheat, hybrid between, (34) 339.
 Barley—Continued.
 as affected by—
 aluminum, (40) 125.
 boron, (39) 429.
 cyanamid and dicyanodiamid, (40) 722.
 disinfectants, (26) 820.
 frost, (27) 560.
 greenhouse temperature, (37) 533.
 poisons, (39) 224.
 smelter wastes, (37) 526.
 soil disinfectants, (31) 621.
 soil volume and available plant food, (31) 132.
 water level, (26) 620.
 as beriberi preventive, (28) 761.
 green manure, (39) 31.
 substitute for oats, (29) 36.
 supplement for wheat in bread making, (37) 263.
 Asplund variety, (40) 626.
 awned and awnless, transpiration, (29) 135.
 bacteria affecting malting process, (27) 313.
 bacterial blight—
 dissemination, (37) 839.
 notes, (35) 845.
 studies, (38) 548.
 bacterial disease, notes, (36) 845.
 beardless, culture, (32) 598.
 beer varieties, studies, (39) 232.
 bleached with sulphur, notes, (27) 566.
 blindness, notes, (36) 541.
 blowings, analyses, (27) 774.
 bran, analyses, (26) 266, 714, 770; (27) 570; (31) 467; (36) 765; (38) 368.
 bran, methods of analysis, (29) 311.
 bread, making, (36) 159.
 breeding, (26) 434; (32) 38; (40) 523.
 breeding—
 and improvement in Sweden, (39) 833.
 experiments, (27) 734; (28) 828; (29) 138; (30) 633; (33) 331, 432; (37) 33, 827; (39) 126; (40) 233, 524.
 brewing, dissemination in Germany, (27) 639.
 bushel weights, (37) 889.
 by-products, analyses, (38) 67.
 characteristics, (32) 38.
 Chinese, varieties, (29) 530.
 chop, analyses, (28) 464; (31) 863; (34) 169; (36) 765; (39) 370; (40) 571.
 classification, (27) 31; (38) 833.
 cold resistance of, (30) 524.
 coloring materials in, (32) 39.
 composition, (31) 431; (32) 760.
 composition as affected by—
 companion crop, (26) 617.
 environment, (32) 431.
 fertilization and soil preparation, (34) 230.
 irrigation, (28) 332.
 composition at different stages, (39) 836.
 correlation in, (30) 235, 830; (32) 433; (37) 141.
 cost of production, (26) 94; (29) 690; (32) 530, 594, 688; (33) 830; (35) 691.
 cost of production in—
 Austria, (28) 594.
 Great Plains area, (33) 231.
 covered smut, description and treatment, (26) 341.
 critical period of growing season, (39) 811.
 culture, (27) 337; (30) 434; (32) 132, 760; (34) 128, 694; (38) 636; (39) 834.
 culture—
 and use, (39) 533.
 continuous, (27) 831, 832; (29) 227; (30) 124; (35) 30; (37) 445; (39) 530, 635; (40) 824.
 experiments, (26) 38, 329, 737; (27) 232, 233, 335, 530, 638; (29) 138, 225, 426, 427, 630, 632, 735; (30) 33, 133, 231; (31) 44; (32) 36, 132, 430, 431, 526, 528; (33) 230, 323, 431, 633, 830; (34) 137, 228; (35) 228; (36) 32, 33, 436, 830; (37) 436, 438, 734, 823, 825; (38) 132, 133, 134, 334, 631, 632, 634, 830; (39) 124, 125, 126, 128, 227, 437, 632; (40) 731, 734, 735.
 experiments in Canada, (40) 228.
 experiments in India, (40) 332, 523, 825.
 experiments in Queensland, (40) 230.
 experiments in Rhodesia, (40) 825.
 for chicken feed, (38) 827.
 for hay, (39) 125.
 for winter forage, (38) 735.
 in Argentina, (37) 823.

Barley—Continued.

culture—continued.

- in Indiana, (40) 735.
- Iowa, (39) 135.
- Mexico, (32) 131.
- Michigan, (39) 320.
- New Mexico, (40) 18.
- New South Wales, (38) 231.
- North Dakota, (40) 736.
- southern Idaho, (36) 227.
- Texas Panhandle, (29) 429; (35) 440.
- Washington, (37) 334.
- western Nebraska, (35) 438.
- Wisconsin, (31) 134.
- Wyoming, (38) 527.
- on moor soils, (30) 229; (38) 132; (39) 428, 437; (40) 523.
- relation to rainfall, (33) 715.
- under dry farming, (26) 828; (30) 435; (36) 528, 529; (37) 329; (39) 131.
- under irrigation, (34) 528.
- cytological studies, (26) 325.
- decomposition in soil, (40) 214.
- decorticated or sterilized, relation to beriberi, (35) 167.
- depth of sowing tests, (27) 835.
- development as affected by iron, (30) 728.
- development of grains, (32) 121.
- dietary qualities, (39) 666.
- diseases—
 - in Egypt, (30) 747.
 - notes, (33) 146; (35) 245.
 - studies, (28) 844; (30) 846.
 - treatment, (31) 446; (35) 544; (36) 247, 845.
- distance experiments, (30) 732.
- dynamiting and subsoiling experiments, (32) 528.
- ears, abnormal, notes, (29) 446.
- effect on—
 - companion crop of peas and beans, (32) 515.
 - milk and butter, (34) 570.
 - milk secretion, (34) 269; (36) 173; (40) 878.
 - milling quality of wheat, (29) 866.
- electroculture, (27) 231; (39) 230; (40) 428.
- embryo and aleurone layer, studies, (26) 229.
- embryo, morphology, (37) 127.
- enemies of, (29) 555.
- eosin, for pigs, (27) 570.
- fall-sown, in Maryland and vicinity, (36) 736.
- feed—
 - analyses, (26) 165; (29) 367; (31) 467; (40) 571.
 - and screenings, analyses, (40) 571.
 - description, (40) 72.
- feeding value, (34) 867; (39) 474, 879; (40) 72, 771.
- fertilizer experiments, (26) 231, 329, 423, 424, 522, 527, 535; (27) 32, 125, 530, 628, 638, 831; (28) 34, 724, 725, 726, 736, 816; (29) 22, 126, 227, 625, 727, 731, 736, 796; (30) 125, 229, 235, 324, 335; (31) 31, 37, 123, 217, 330, 421, 828, 829; (32) 431, 519; (33) 219, 227, 326, 625, 632; (34) 132, 517, 518, 622, 630, 724, 820; (35) 30, 325, 326, 425, 520; (36) 217, 529, 626, 726, 818; (37) 34, 229, 436, 438, 823; (38) 122, 726, 820; (39) 428, 530, 622, 623, 624, 726; (40) 515, 523, 621, 733, 735, 824, 825.
- fields, weed control in, (40) 536.
- flour, analyses, (34) 164; (38) 666.
- flour for bread making, (40) 67, 360, 556, 657.
- flour, recipes, (39) 267; (40) 67.
- following alfalfa, (39) 436.
- for cows fed alfalfa, (33) 575.
- Geocica squamosa on, (40) 752.
- germ meal, analyses, (33) 759.
- germinated, maltase in, (35) 414.
- germinating, enzymatic peptolysis in, (32) 130.
- germinating power as affected by age, (27) 740.
- germination, (29) 629.
- germination and growth as affected by ammonium sulphate, (40) 218.
- germination as affected by—
 - calcium cyanamid, (33) 818.
 - depth of planting, (36) 437.
 - fertilizers, (29) 327.
 - fungicides, (29) 346.
 - hot water treatment, (30) 449.
 - silver nitrate, (34) 31.
 - stimulants, (26) 131.
 - temperature, (30) 531.
- germination—
 - at different dates after threshing, (40) 443.
 - in mercury vapor light, (30) 827.

Barley—Continued.

germination—continued.

- tests, (29) 223; (31) 733; (37) 239.
- tests in hydrogen peroxid, (27) 201.
- germinative ability and vegetative force, (29) 740.
- germ-ripening experiments, (26) 130.
- grades of, (32) 138.
- grain—
 - amino acid in, (33) 665.
 - development, studies, (27) 836.
 - morphology, (32) 823.
- grass—
 - analyses, (28) 463; (30) 565.
 - smut, infection of wheat by, (26) 845.
- green, analyses, (29) 467; (30) 565.
- green manuring experiments, (37) 734.
- ground, analyses, (26) 363, 468; (27) 570.
- ground, digestibility, (37) 677.
- growing with—
 - legumes, (40) 822.
 - soy beans, (39) 741.
- growth as affected by—
 - alkali salts, (34) 125.
 - Azotobacter, (28) 814.
 - calcium oxid, (40) 124.
 - concentration of nutrient solution, (35) 436.
 - electric light, (28) 228.
 - electricity, (30) 827.
 - fertilizer salts, (29) 329.
 - meteorology, (29) 510.
 - radioactivity, (28) 731.
 - spacing, (31) 328.
- growth in—
 - acid soil, (40) 324.
 - artificial light, (28) 735.
 - association with weeds, (38) 734.
 - heated soils, (31) 216.
 - sterilized soils, (31) 336.
 - volcanic ash, (29) 726; (32) 36.
 - water culture, (33) 223.
- hail injuries to, (33) 127.
- hardiness, relation to sap density, (39) 430.
- Helminthosporium diseases of, (29) 645.
- history of, (31) 131.
- hordein and wheat gliadin, relationship, (31) 377.
- hull content, determination, (26) 132.
- humic nitrogen content, (40) 510.
- hybrid, mosaic-like splitting in, (40) 825.
- hybridization experiments, (28) 431, 828; (36) 436.
- hybrids, dominant and recessive characters in, (28) 197; (30) 33.
- hybrids, notes, (29) 735.
- improvement, (28) 828; (29) 532; (32) 630; (37) 731.
- improvement in Canada, (37) 831.
- inheritance in, (37) 332.
- inheritance of albinism in, (31) 329.
- inoculation experiments, (28) 426; (35) 32.
- insects affecting, (29) 555.
- integumentary system in relation to permeability, (40) 519.
- irrigation experiments, (28) 130, 132; (29) 182, 632; (30) 34; (31) 328; (32) 37, 225; (33) 225, 827; (37) 640, 822.
- late blight, studies and bibliography, (29) 750.
- leaf blight, notes, (27) 45.
- leaf stripe—
 - notes, (28) 149, 150.
 - treatment, (31) 147; (33) 846.
- lime and marl for, (40) 322.
- liming experiments, (29) 223; (35) 429; (36) 27; (37) 733; (38) 22; (39) 530; (40) 134.
- loose smut—
 - biology of, (31) 50.
 - description and treatment, (26) 341.
 - infection experiments, (30) 240.
 - investigations, (28) 545.
 - notes, (29) 150; (30) 241, 448.
 - treatment, (26) 546; (27) 246, 848; (28) 445, 646; (31) 147, 342; (33) 846; (37) 247.
- malt, starch-forming enzyme of, (33) 312.
- maltase content, (31) 204.
- malted, analyses, (39) 167.
- malting power, (39) 232.
- meal, analyses, (26) 267, 666; (34) 469; (40) 571.
- measure of enzymic strength, (40) 612.
- Michigan Winter, (40) 233.

Barley—Continued.

- middlings, analyses, (31) 663; (33) 371; (35) 867; (39) 370.
- mildew, relation to light, (30) 747.
- milling experiments, (40) 556.
- milling value and use, (38) 663.
- mosaic inheritance in, (30) 335.
- mutation in pure line of, (30) 36.
- new form, description, (30) 526.
- new two-rowed winter variety, (30) 36.
- nitrogen distribution in, (36) 269.
- nutrition, studies, (31) 729.
- nutritive value and use, (32) 760.
- of Khorassan, (37) 446.
- on alkali soils as affected by copper and zinc, (39) 619.
- pedigreed, in Wisconsin, (40) 624.
- pedigreed, yields, (31) 134.
- phenological observations, (40) 811.
- phosphoric acid exchange in, (28) 818.
- phosphorus content, (27) 461.
- plant, relation to reaction of nutrient solution (40) 324.
- planting and harvesting dates, (26) 533.
- plat tests, technique, (40) 227.
- pollination, (36) 527.
- potash lime for, (26) 526.
- potassium and phosphorus requirements, (37) 34.
- powdery mildew infection of, (33) 244.
- prevention of beriberi by, (31) 762.
- prices and shrinkage, (34) 337.
- production in—
 - Bohemia, (32) 827.
 - Chile, (39) 231.
 - 1911, (26) 595.
 - Russia, (26) 294.
 - Spain, (28) 736.
 - United Kingdom, (26) 793.
- protein, nutritive value, (26) 155; (39) 665.
- protein substances of, (33) 310.
- quality as affected by weather, (26) 415.
- rate of sowing tests, (27) 335, 531, 638, 639.
- ratio of grain to straw, (36) 218.
- refuse, analyses, (39) 167.
- relation between size of seed and yield, (26) 434.
- relation of tops to roots, (31) 733.
- relative yielding capacity, (40) 625.
- right- and left-handedness in, (27) 236; (30) 335.
- rod-row tests, technique, (38) 429.
- rolled—
 - analyses, (36) 765.
 - feeding value, (39) 776, 783.
- root—
 - development, (26) 327.
 - development of seedlings, (30) 136.
 - development with other crops, (26) 129.
 - system, (32) 634.
- rotation experiments, (29) 227; (40) 331, 733.
- rust spores in seeds of, (30) 241.
- rusts—
 - description, (35) 47.
 - in Canada, (34) 51.
 - notes, (26) 143; (37) 453.
- rye stalk disease affecting, (26) 546.
- secondary rootlets, (40) 32.
- seed-bed preparation, (33) 230.
- seed—
 - cleaning, (40) 40.
 - coats, permeability, (34) 626.
 - disinfection, (31) 738, 840.
 - migration of reserve material to, (34) 35, 729.
 - resistance to desiccation, (40) 39.
 - treatment, (39) 238.
 - viability as affected by age, (31) 624.
- seedling—
 - depths, (40) 227.
 - experiments, (29) 224, 225, 426; (30) 333; (31) 328, 330; (32) 528, 530, 531; (36) 134; (37) 229, 733; (39) 130, 227, 228, 336; (40) 228.
 - in furrows, (36) 831.
 - tests under irrigation, (39) 133.
- seedlings—
 - absorption of nitrogen by, (35) 434.
 - as affected by aluminum, (39) 115.
 - growth in nutrient solutions, (38) 736.
- seeds—
 - absorption of water by, (28) 226.
 - migration of reserve material to, (32) 399.

Barley—Continued.

- selection experiments, (37) 32; (40) 233.
- selection of varieties, (28) 633.
- selective permeability, (37) 25.
- Septoria disease, (36) 48.
- shorts, analyses, (27) 170; (33) 568; (35) 562; (37) 471.
- smut—
 - as affected by date of planting, (31) 50.
 - effect on horses, (27) 882.
 - in Dutch East Indies, (38) 448.
- smuts—
 - cause and treatment, (30) 47.
 - description and treatment, (38) 548.
 - life history and treatment, (28) 445.
 - notes, (28) 544; (35) 348.
 - treatment, (27) 137, 445; (28) 51; (31) 344; (39) 243, 353, 533, 851; (40) 156, 346.
- soil moisture removal by, (40) 430.
- spring v. fall sown, (39) 836.
- sprouts, analyses, (31) 73.
- starch, gelatinization point, (30) 10.
- starch, studies, (31) 828.
- statistical notes, (40) 626.
- straw—
 - analyses, (28) 768.
 - composition and digestibility, (34) 565.
 - lime and phosphorus content, (26) 873.
- streak disease, treatment, (32) 145, 341.
- stripe, notes, (32) 544.
- stripe, treatment, (39) 851.
- substitute in malting operations, (40) 808.
- susceptibility to mildew, (29) 844.
- Svalof golden, notes, (30) 230.
- Swiss types, (27) 338.
- tables for wagonloads, (32) 42.
- tannin in seed coats, (27) 730.
- thrips affecting, (28) 452.
- transformation of nitrogen by, (29) 133.
- treatise, (30) 230.
- v. hominy meal for pigs, (29) 671.
- v. spring wheat, (40) 443.
- varieties, (26) 39, 233, 629, 632, 733; (27) 32, 137, 334, 337, 530, 531, 533, 637, 638, 736, 834; (28) 432, 532, 827; (29) 138, 222, 225, 425, 428, 530, 630, 736; (30) 135, 229, 235, 434, 435, 525, 828, 829; (31) 829; (32) 36, 224, 334, 431, 433, 527, 528, 529, 530, 730, 731, 827; (33) 33, 34, 330, 431, 631, 632, 633; (34) 138, 227, 229, 629, 733, 734, 735; (35) 30, 33, 228, 229, 526, 637, 826; (36) 32, 33, 34, 36, 132, 133, 227, 335, 435, 437, 529, 634, 735, 830; (37) 29, 30, 32, 33, 132, 135, 227, 228, 230, 330, 332, 334, 436, 438, 530, 640, 641, 823, 824, 825; (38) 30, 131, 134, 333, 433, 632, 634, 636, 736, 830, 832; (39) 533.
- varieties—
 - for Alaska, (39) 125, 126.
 - California, (26) 233.
 - Montana dry lands, (35) 735.
 - moor culture, (39) 438.
 - New South Wales, (27) 338; (38) 528.
 - the Dakotas and Montana, (38) 230.
 - Utah dry lands, (38) 230.
 - identification, (38) 833.
 - in Argentina, (40) 234, 625.
 - new Swedish, (39) 833.
 - resistant to rust, (30) 230.
- variety—
 - characteristics, (31) 228.
 - tests, (39) 128, 129, 130, 227, 228, 333, 334, 336, 337, 435, 436, 437, 735, 737, 738; (40) 31, 32, 135, 228, 230, 233, 332, 431, 523, 626, 728, 730, 731, 732, 733, 735, 825.
 - tests, technique, (40) 227.
- volume weight and grain characteristics, (37) 643.
- water requirements, (29) 826; (32) 127; (34) 720; (38) 227.
- water requirements in India, (27) 429.
- weed seeds in, (32) 833.
- wheat midge on, (39) 159.
- wild, eradication, (39) 842.
- winter, northern limits in United States, (37) 533.
- winter, notes, (28) 432.
- xenia in, (40) 826.
- yield as affected by—
 - antagonism between anions, (33) 323.
 - pasturing, (30) 633.
 - source of seed, (26) 329.
 - sulphur, (35) 529.

- Barley—Continued.
 yield of plump v. shrunken seed, (27) 734.
 yield on alfalfa stubble, (33) 828.
 yields, (27) 734; (29) 138; (40) 735.
 yields—
 determination, (37) 634.
 in Australia, (38) 133.
 in relation to rainfall, (34) 319.
- Barn—
 and field experiments in 1917, (39) 398.
 conveniences, descriptions, (27) 90.
 trusses, stresses in, (36) 399.
- Barnacle wax-scale notes, (28) 453.
- Barns—
 cattle and sheep, plans, (31) 488.
 circular, construction, (27) 589; (40) 90.
 concrete, for cold climate, (38) 292.
 construction, (37) 886, 887.
 dairy—
 construction and equipment, (31) 892.
 plans, (32) 470.
 ventilation, (29) 474.
 disinfection, (29) 885.
 for prairie farms, (35) 689.
 framing, (26) 398.
 plans, (26) 894; (28) 291; (36) 399.
 plans and descriptions, (27) 89.
 plans and specifications, (29) 390; (33) 783.
 sanitary, construction, (27) 89.
 sanitary, relation to clean milk, (29) 500.
 ventilation, (32) 284; (33) 891.
- Barnyard—
 grass, analyses, (34) 39.
 grass, Japanese, culture experiments, (27) 735.
 manure, *see* Manure.
 millet, notes, (26) 362.
- Barometric pressure—
 and carbon dioxide excretion, relationship, (30) 563.
 at Washington, D. C., (34) 117.
 diurnal variations, (27) 316; (28) 213; (32) 810.
 effect on—
 carbon dioxide excretion in man, (29) 569.
 metabolism, (31) 362.
 plant growth, (36) 730.
 in absolute units, (31) 212.
 in Italy, (35) 618.
 in soils, (26) 323.
 of western and equatorial Africa, (34) 208.
 relation to—
 sun spots, (38) 115.
 temperature, humidity, and latitude, (34) 413.
 water level, (39) 17.
 wind velocity, (40) 715.
 units, conversion, (31) 615.
 variations in United States, (37) 807.
- Barrel, standard, Federal law, (37) 832.
- Barrels, wooden, tests, (31) 144.
- Bartonella bacilliformis
 asexual cycle, (34) 858.
 notes, (31) 847; (37) 377.
- Bartramia longicauda, notes, (27) 355.
- Baryconus oecanthi, notes, (31) 650.
- Baryscapus sp., notes, (29) 658.
- Basalt, ground, effect in water culture, (28) 817.
- Basedowsan, nature and use, (26) 580.
- Basella rubra, leaf disease of, (31) 56.
- Bases—
 absorbed, determination in soils, (30) 215.
 effect on seed germination, (26) 131.
 natural, treatise and bibliography, (32) 201.
 nutrient and nonnutrient, effect on plant growth, (30) 128.
 organic, occurrence in rabbit meat, (26) 563.
 plant, studies, (31) 309.
 reactions of ions and molecules, (37) 201.
- Basi from sugar cane, (29) 118.
- Basic compounds, effect on plants and microorganisms, (27) 229.
- Basic slag, *see* Phosphatic slag.
- Basidiomycetes, culture experiments, (32) 341.
- Basilona imperialis, notes, (26) 656, 856.
- Basket willows, *see* Willows.
- Baskets, standard, (38) 40.
- Basset hounds, tricolor inheritance, (38) 269.
- Bassia—
 butyracea, seeds of, (32) 613.
 cake, analyses, (28) 363.
 spp., oil content, (31) 234.
- Bassides in British Museum, revision, (31) 655.
- Bassus—
 carpocapsae n.sp., description, (35) 262.
 coleophorae n.sp., description, (34) 456.
 earinoides, parasitic on bud moth, (34) 250.
 gibbosus, notes, (36) 655.
 laetatorius, notes, (28) 254.
 sp., parasitic on Syrphidae, (26) 349.
- Basswood—
 forcing experiments, (38) 443.
 planting, (32) 853.
- Best-fiber industry in Dutch East Indies, (38) 527.
- Bastol, analyses, (27) 371.
- Bastol, notes, (30) 202, 711.
- Bat guano—
 analyses, (27) 824, 825; (29) 516; (31) 724; (33) 821; (35) 127, 328; (38) 23.
 analyses and fertilizing value, (36) 325.
 deposits in Cuba, (27) 118.
 deposits in Mexico, (26) 623.
 examination, (36) 319.
 fertilizing value, (27) 825; (29) 129; (33) 517.
 of Cuba and Isle of Pines, (33) 24.
 of Porto Rico, (39) 426.
- Bat, new—
 from Mexico, (37) 757.
 from Porto Rico, (35) 460.
- Bathing in Great Salt Lake, metabolic effects, (31) 763; (33) 367; (35) 767.
- Bathyrheometer as anemometer, (38) 812.
- Bathyrhix tibialis n.sp., description, (38) 565.
- Batocera—
 hector, injurious to kapok, (26) 354.
 rubra in Tortola, (39) 862.
 rubra, notes, (26) 151; (40) 655.
- Batrachedra rileyi, *see* Pyroderces rileyi.
- Bats—
 eradication of mosquitoes by, (31) 62.
 injurious to kapok, (26) 354.
 of California, (40) 853.
 relation to rabies, (27) 285.
- Batteries, dry, care of, (26) 686.
- Battle fields, leveling, (38) 690.
- Bauhinia esculenta, notes, (29) 362.
- Bavarian—
 cereal breeding station in Weihenstephan, (33) 831.
 Mooriculture Station, report, (26) 830.
- Bay—
 flea louse, notes, (37) 157.
 swamp, analyses, (26) 612.
 tree, culture for oil, (35) 449.
 trees, culture experiments, (38) 542; (40) 339.
- Bdella cardinalis, notes, (27) 861.
- Bdellolarynx sanguinolentus, life history, (35) 856.
- Beach fog and fracto-cumulus, (34) 118.
- Beachflies breeding in dead crabs, (39) 861.
- Beam ends, protection from decay, (26) 544.
- Bean—
 and corn silage, analyses, (39) 773.
 anthracnose—
 notes, (33) 432; (37) 652; (38) 848.
 relation to temperature, (34) 541.
 resistant varieties, (34) 644; (35) 348; (40) 643.
 studies, (39) 354, 455, 745.
 treatment, (34) 746; (35) 652; (36) 748; (38) 249.
 aphid, *see* Aphis rumicidus.
 bacteria as affected by acidity, (39) 722.
 bacteria, notes, (39) 338.
 bacteriosis in Indiana, (39) 52.
 bacteriosis, studies, (34) 746.
 beetle, studies, (37) 465.
 blight or bacteriosis, notes, (37) 150.
 blight, studies, (28) 846; (39) 354, 455.
 blight, treatment, (34) 746; (35) 652; (36) 748.
 Cercospora disease, notes, (39) 453.
 diseases—
 and pests in greenhouses, (38) 750.
 bibliography, (39) 455.
 description and treatment, (37) 248.
 in Colorado, (39) 52.
 in New York, (37) 840.
 in Vermont, (40) 50.
 notes, (31) 542; (35) 245; (38) 48; (39) 52, 249.
 453; (40) 47.
 studies, (33) 544, 547; (36) 746; (39) 354, 455.
 embryos, nutrition and growth, (38) 127.
 flour, protein digestibility, (33) 564.

Bean—Continued.

- fly—*see also* *Phorbia fusciceps*.
 - notes, (29) 657; (30) 458; (32) 350.
 - Philippine, studies, (40) 457.
 - Fusarium disease as affected by soil temperature, (39) 147.
 - growing contest, notes, (29) 94.
 - hay, analyses, (31) 740.
 - lands, semiannual cropping, (37) 829.
 - leaf-beetle—
 - notes, (29) 652.
 - on cowpeas, (34) 254; (40) 860.
 - leaf roller, notes, (29) 652; (35) 355.
 - leaf spot, treatment, (32) 843.
 - maggot—*see also* *Phorbia fusciceps*.
 - in Chile, (40) 648.
 - notes, (26) 753; (35) 363.
 - meal, analyses, (26) 468, 666; (29) 367; (32) 465.
 - meal, effect on milk and butter, (34) 570.
 - mosaic disease, notes, (37) 751.
 - oil, constants of, (35) 611.
 - Orobanche disease, (39) 52.
 - pests, treatment, (33) 231.
 - plant, relation to reaction of nutrient solution, (40) 324.
 - pod blight, investigations, (38) 449.
 - pod borer, notes, (27) 155.
 - Pods, analyses, (26) 665.
 - Pods, individuality as compared with that of the plant, (40) 31.
 - refuse, analyses, (26) 714.
 - root diseases, studies, (36) 248.
 - rust—
 - and spot diseases, (39) 249.
 - control, (40) 845.
 - description, (32) 238.
 - notes, (29) 150; (31) 746; (37) 453.
 - resistance to, (38) 149.
 - susceptibility, studies, (39) 852.
 - sclerotinia diseases, (40) 49.
 - seed, preservation and treatment, (28) 846.
 - seedlings—
 - as affected by cerium chlorid, (31) 326.
 - correlation in, (37) 630.
 - primordial leaves in, (36) 221.
 - stimulation by Roentgen rays, (30) 729.
 - seeds, large v. small, (31) 634.
 - slug, notes, (40) 56.
 - starch, studies, (31) 828.
 - stem disease, notes, (36) 748; (39) 354.
 - stem disease, studies, (38) 148.
 - stem maggot, notes, (30) 160.
 - straw, analyses, (26) 665.
 - straw, composition and digestibility, (34) 565.
 - strings and stems, analyses, (38) 626.
 - sun scald, studies, (39) 455.
 - thrips—
 - internal parasite of, (26) 858.
 - notes, (38) 258.
 - on olive, (38) 157.
 - studies, (28) 249.
 - tuberles, analyses, (27) 802.
 - weevil—
 - biology and control, (39) 363.
 - control, (39) 664.
 - in Vermont, (40) 50.
 - Mexican, notes, (34) 857.
 - notes, (34) 754; (37) 262; (40) 50, 64, 266, 861.
 - remedies, (40) 553.
 - studies, (36) 855; (40) 553.
 - weevils in Hawaiian Islands, (40) 266.
 - weevils in South Africa, (40) 861.
- Beans—
- abortion in relation to position in pod, (36) 838.
 - absorption of ultraviolet rays, (39) 733.
 - adzuki, *see* Adzuki beans.
 - agglutinin from, (37) 81.
 - analyses, (26) 267, 770; (31) 740; (37) 268, 343; (39) 773.
 - as affected by—
 - alkali salts, (39) 720.
 - bog water, (28) 733.
 - copper fungicides, (28) 247.
 - fertilizers, (29) 339.
 - pod position, (34) 134.
 - as dry-farm crop, (39) 736.
 - food, (34) 164.
 - forage crop, (37) 640.
 - host plant of red spider, (32) 157.

Beans—Continued.

- Asiatic, description, (31) 739.
- assimilation of nitrogen by, (26) 32.
- bacterized peat for, (39) 116.
- behavior of organic substances in, (39) 526.
- Bengal—
 - as green manure, (36) 737.
 - notes, (31) 864.
 - or Mauritius, as a cover crop, (34) 736.
- black, from Venezuela, tests, (33) 536.
- black-eye, as orchard intercrop, (39) 47.
- bonavist, lablab, or hyacinth, (34) 436.
- breeding experiments, (27) 528; (29) 433; (30) 343; (32) 540; (33) 635; (39) 747; (40) 524, 740.
- broad, culture experiments, (32) 132.
- bush, lime-magnesia requirements, (29) 520.
- bushel weights, (37) 889.
- Californian, composition, (39) 266.
- Canada, culture experiments, (31) 829.
- canning, (39) 165, 717.
- canning wastes, purification, (39) 717.
- catalytic fertilizers for, (27) 629.
- color inheritance in, (40) 536.
- composition at different stages, (39) 836.
- correlation studies, (36) 826.
- cost of production, (30) 830.
- creeping, notes, (31) 631.
- cull, analyses, (27) 170.
- cull, for fattening steers, (40) 768.
- culture, (26) 393; (32) 226; (37) 136, 195, 232, 343, 641, 642.
- culture—
 - and harvesting for drying, (37) 642.
 - and use in Trinidad, (40) 763.
 - experiments, (30) 237, 830; (31) 732; (33) 31; (35) 141; (36) 32, 340; (37) 742; (38) 830; (39) 128, 333, 437, 632.
 - for seed, (37) 436.
 - in Antigua, (36) 735.
 - Arkansas, (39) 635.
 - California, (39) 233.
 - Colorado, (39) 31.
 - Dutch East Indies, (30) 697.
 - greenhouses, (38) 749.
 - Michigan, (39) 320.
 - Montana, (33) 526.
 - New Mexico, (40) 18.
 - Northwest, (30) 138; (38) 434.
 - Nyasaland, (26) 829.
 - Philippines, (39) 444.
 - Porto Rico, (36) 341.
 - Rhodesia, (27) 32, 637.
 - project work in, (33) 792.
 - under dry farming, (36) 528, 529; (37) 329.
 - under shade, (27) 741.
- cumulative influence of starvation in, (27) 636; (28) 331.
- description, (30) 828.
- dietary deficiencies, (37) 163.
- doubling cotyledons and leaves in, (36) 331.
- drying, (37) 509.
- effect on—
 - companion crop of barley, (32) 515.
 - intestinal flora, (40) 867.
 - soil fertility, (27) 136.
- electroculture experiments, (30) 788.
- environment of pods and seeds in, (39) 738.
- environmental changes in, (30) 343.
- ere, culture experiments, (29) 830.
- factors affecting weight, (30) 433.
- feeding value, (27) 378.
- fertility in relation to ovules per pod, (38) 29.
- fertilizer experiments, (26) 630, 631, 727; (27) 32, 137, 421; (28) 236, 735; (29) 731; (30) 627; (31) 421; (33) 326; (34) 27, 723; (35) 425; (37) 742; (40) 134.
- fertilizing value, (32) 216, 630, 828.
- field, (40) 435.
- field—
 - analyses, (26) 363.
 - critical period of growing season, (39) 811.
 - culture, (33) 231; (39) 441, 834.
 - culture experiments, (32) 132, 431.
 - culture in Canada, (33) 432.
 - depth of sowing tests, (27) 835.
 - description and agricultural value, (36) 635.
 - graphic summary of seasonal work, (39) 495.
 - tests in Montserrat, (40) 228.
 - varieties, (27) 334; (32) 37, 132; (33) 432.
 - variety tests, (39) 128.

Beans—Continued.

- fodder, of India, (40) 231.
- forcing experiments, (38) 443.
- forcing with radium, (28) 825.
- French, varieties at Wisley, (33) 536.
- from Sudan, analyses, (29) 569.
- from various countries, analyses, (40) 557.
- fruit thinning experiments, (27) 741.
- garden—
 - as an index to smoke injury, (31) 146.
 - culture, (30) 335.
 - nodule bacteria of, (32) 33, 327.
 - relation of mortality to seed weight, (30) 237.
- genetic studies, (32) 130.
- germinating, pentosans in, (27) 730.
- germination as affected by—
 - fertilizers, (29) 327.
 - metallic compounds, (29) 528.
 - Roentgen rays, (28) 128.
 - salt concentration, (39) 732.
- germination in—
 - hydrogen peroxid, (27) 201.
 - mercury vapor light, (30) 827.
- glucosid formation by, (36) 329.
- green, as meat substitute, (38) 166.
- ground, analyses, (26) 715; (31) 65.
- growth as affected by—
 - fertilizer salts, (29) 329.
 - light, (28) 227.
 - manganese salts, (32) 725.
- growth in—
 - acid soil, (40) 324.
 - calcareous soils, (31) 627, 816.
 - relation to climate, (33) 116.
- haricot, field tests in Fiji, (40) 231.
- harvesting and storage, (38) 41.
- hemagglutinating and precipitating properties, (30) 804.
- history and phylogenesis, (38) 539.
- home-canned string, botulism caused by, (33) 866.
- home drying, (38) 41.
- horse, *see* Horse beans.
- hybridization experiments, (29) 433.
- imported, inspection in France, (27) 310.
- inheritance—
 - in, (27) 740; (28) 740; (30) 343; (32) 538; (34) 146; (36) 729, 839.
 - of blossom color in, (30) 142.
 - eye pattern in, (36) 826.
 - habit in, (34) 41.
 - height in, (35) 836.
 - seed color in, (38) 539.
 - shape and size in, (36) 735.
- insects affecting, (33) 153; (39) 256.
- intoxication of horses by, (26) 887.
- irrigation experiments, (29) 638; (31) 732; (32) 186; (33) 683.
- irrigation on sandy soil, (33) 287.
- jack, *see* Jack beans.
- kidney—
 - as forage crop, (38) 336.
 - fertilizer experiments, (28) 735.
 - xenia in, (31) 836.
- lablab, analyses, (27) 68.
- Lima—
 - arsenical burn of, (31) 641.
 - culture, (26) 539.
 - downy mildew, (39) 52.
 - improvement by selection, (29) 540.
 - insects affecting, (33) 355; (37) 460.
- liming experiments, (40) 134.
- limitation studies, (34) 146; (36) 839; (39) 747.
- Lyon—
 - as cover crop, (31) 635; (34) 736.
 - breeding experiments, (27) 338.
 - culture experiments, (27) 336; (31) 829.
 - hybridization experiments, (27) 338; (29) 228; (31) 734; (34) 431; (35) 829.
 - notes, (26) 362.
- Madagascar, culture experiments, (38) 336, 527.
- marrow, elongation of hypocotyl, (28) 739.
- membracid attacking, (40) 753.
- microscopic character, (36) 714.
- millling experiments, (40) 556.
- moth, yields, (39) 434.
- mungo, *see* Mungo beans.
- mutation, (30) 329; (36) 138.
- Natal sugar, culture experiments, (30) 632.

Beans—Continued.

- native, substitutes for in food of French Army, (40) 557.
- natural selection in, (28) 430; (29) 139.
- navy—
 - antineuritic value as affected by heat and alkalis, (40) 565.
 - ash analyses, (29) 861.
 - dietary properties, (39) 266, 666.
 - starch content, (35) 108.
 - variation in, (39) 330.
- nematodes affecting, (30) 448.
- nutritive value, (36) 63.
- of Burma, names and descriptions, (33) 229.
- oil content, (27) 717.
- phosphorus content, (27) 461.
- plant nutrients removed by, (29) 837.
- Porto Rico, culture experiments, (31) 829.
- potash lime for, (26) 526.
- preparation and use, (32) 253.
- preservation, (38) 266.
- preservation by pressure, (32) 416.
- production in Spain, (28) 736.
- Rangoon, examination, (30) 258.
- red spider attacking, (39) 65.
- relation—
 - between weight and germinability, (30) 522.
 - of tops to roots, (31) 733.
 - of weight of seed to yield, (29) 522, 633; (31) 824.
- salicylic acid reaction, (36) 63.
- Sclerotinia libertiana affecting, (26) 647.
- seed—
 - color variation in, (37) 334.
 - disinfection experiments, (31) 738.
 - testing, (38) 41.
 - treatment, (39) 238; (40) 443.
 - treatment with iron sulphate, (34) 528.
- selection experiments, (36) 735; (37) 32.
- small, seeding experiments, (35) 526.
- snap, Sclerotinia blight of, (36) 647.
- soaking seed, (40) 727.
- southwestern, studies, (28) 639.
- stachyose in, (31) 13.
- Stizolobium, culture in Porto Rico, (29) 631.
- stored, variations in weight of, (31) 235.
- string—
 - canning, (39) 165.
 - carbohydrates in, (31) 11.
 - drying, (37) 509.
 - electroculture experiments, (40) 147.
 - greenhouse, carbon dioxide for, (39) 38.
 - response to carbon dioxide, (40) 820.
- susceptibility to anthracnose, (26) 747.
- sword, as cover crop, (34) 736.
- sword, culture in Porto Rico, (29) 631.
- tepary, *see* Tepary beans.
- tetracotyledonous race, (36) 522.
- toxicity, (38) 539.
- translocation of mineral constituents, (34) 427.
- use by prehistoric Americans, (38) 167.
- use in bread making, (40) 66.
- variation in due to fertilizers, (29) 435.
- varieties, (26) 631; (27) 32; (28) 533; (29) 222, 228, 426; (30) 829; (31) 732; (32) 630; (33) 33, 34; (35) 141; (36) 32, 437; (37) 32, 329; (38) 344, 432, 632, 750, 832; (39) 233.
- varieties for Texas, (40) 729.
- varieties tolerant to salt, (40) 435.
- variety tests, (39) 128, 333, 434, 835; (40) 431, 730.
- velvet, *see* Velvet beans.
- water requirements, (32) 127; (34) 720; (38) 227.
- weight in relation—
 - number of pods per plant, (36) 826.
 - position in pods, (32) 521.
- white wax, seeding depths, (40) 227.
- Windsor, as affected by sodium chlorid, (40) 435.
- wire frames for, (33) 891.
- xenia in, (28) 431; (31) 224, 836.
- yield as affected by sulphur, (34) 726.
- Yokohama, culture experiments, (27) 335.
- Yokohama, yields, (29) 224.

Bear—

- clover, effect on forest reproduction, (40) 842.
- grass as feeding stuff, (40) 277.
- grass, notes, (29) 441.
- River basin, hydrography, (32) 587.
- Valley, Calif., hydroelectric development, (28) 415.

- Beard grass, scented, golden, analyses, (30) 565.
- Bears—
grizzly and big brown, of North America, (38) 760.
host of spotted fever tick, (26) 64.
- Beauveria—
(*Botrytis*) *bassiana*, notes, (32) 63.
peteloti n.sp., notes, (37) 467.
(*Sporotrichum*) *globuliferum*, notes, (30) 459.
- Beaver—
fluke, studies, (33) 659.
mountain, habits and economic significance, (39) 759.
mountain, notes, (37) 895.
- Bedbugs—
as affected by cold and starvation, (36) 53.
biology, (28) 654; (31) 156.
destruction by heat, (33) 658; (40) 456.
destruction with cyanid gas, (36) 456.
eggs and larvae, vitality, (32) 348.
fumigation experiments, (36) 53.
host of kala-azar parasite, (28) 655.
notes, (26) 759; (27) 55; (29) 454; (36) 153.
relation to—
 influenza, (40) 548.
 plague, (33) 747.
 poliomyelitis, (28) 753.
 relapsing fever, (36) 356.
 typhoid fever, (28) 251.
remedies, (28) 555; (31) 353; (39) 762.
summary of information, (39) 763.
transmission of—
 diseases by, (26) 760; (31) 550.
 plague by, (38) 559.
 trypanosomes by, (30) 853.
- Bedding—
materials for live stock, (39) 621.
plants, propagation, (40) 247.
- Bee—
colony, temperature of, (31) 254, 553.
disease, notes, (36) 53, 258.
diseases—
 control by heating, (31) 255.
 in British Columbia, (32) 551.
 Germany, (37) 460.
 Massachusetts, (37) 855.
 New Jersey, (38) 865.
 Ontario, notes, (27) 458; (29) 57.
 Pennsylvania, (37) 459.
 notes, (26) 63, 151; (27) 359; (28) 562; (30) 759; (31) 553; (32) 754; (37) 162, 360.
 review of literature, (27) 60.
 studies, (37) 59.
fly, life history, (29) 456.
genus *Andrena*, notes, (40) 65.
moth—
 bacterial diseases of, (26) 250.
 destruction by cold, (40) 760.
 fumigation, (40) 755.
 immunity to microbes, (27) 655.
 immunity to tuberculosis, (31) 155.
 life history, (26) 349; (29) 859; (32) 151.
 notes, (28) 352; (31) 352.
 parasites of, (26) 657; (40) 359.
 paralysis, cause, (38) 564.
 pastures, tests, (40) 65.
 sacbrood disease, (36) 659.
- Beech—
absorption of nitrogen by, (26) 443.
and oak, union of, (33) 343.
as affected by smoke, (31) 521.
bark caterpillar, notes, (34) 63.
canker, notes, (28) 446.
coccus, felted, in Nova Scotia, (30) 358.
density and porosity, (32) 47.
destructive distillation, (27) 745; (38) 808.
diseases, notes, (27) 51; (32) 242.
distillation value, (32) 48.
forcing experiments, (28) 435.
grafting, (31) 443.
growing with spruce and pine, (27) 542.
gumming disease, (39) 254.
historical sketch, (35) 241.
humus, effect on plant growth, (32) 618.
leaf mold, fertilizing value, (29) 622.
leafy twigs, preservation, (37) 837.
mast, feeding value, (32) 566.
Orchestes, notes, (30) 33.
periodicity in, (27) 425; (29) 442.
red, studies, (26) 843.
seedling mildew, notes, (26) 446.
seeds, germination tests, (27) 444.
- Beech—Continued.
snap disease, studies, (30) 653.
timber estimating tables for, (36) 345.
volume tables for, (30) 744.
winter foliation, (36) 224.
- wood—
 analyses and use as human food, (33) 866.
 as affected by ozone, (30) 711.
 Coniophora cerebella on, (39) 553.
 creosote, studies, (37) 114.
 creosote, toxicity to wood-destroying fungi, (37) 502.
 soils, nitrification in, (40) 418.
 woods of United States, (30) 46.
 yield tables, (27) 348.
- Beechnut—
cake, analyses, (26) 363.
oil, manufacture and use, (38) 806.
- Beechnuts, analyses and feeding value, (31) 365.
- Beef—*see also* Cattle, beef.
 adulteration with horse meat, (34) 113.
 and buffalo meat, differentiation, (30) 314.
 as polynneuritis preventive, (28) 761.
 baby, production, (29) 571; (31) 866; (37) 269, 366, 367; (40) 74, 367.
 brisket fat, digestibility, (36) 800.
 by-products, utilization and shipment, (30) 711.
 changes in during cold storage, (36) 759.
 chilled, discolored spots on, (28) 659.
 clubs, farmers', (39) 773.
 cold storage cost, (27) 164.
 cold storage, statistics, (28) 869.
 cost of production, (28) 72.
 cost of production under semirange conditions, (31) 468.
 cured and salted, in United States, (38) 865.
 defrosting, (27) 470.
 dressed, exports from Argentina, (26) 768.
 drying, (27) 279.
 exports from Australia, (33) 268.
 extract, behavior of lactic acid in, (26) 408.
 extract, nutritive effects of, (26) 155.
 fat, accessory growth substance in, (38) 265.
 composition, (27) 499.
 detection in food, (29) 798.
 determination in land, (27) 497.
 digestibility, (34) 364.
 role in glycogen formation, (31) 763.
 fresh, fumeric acid in, (31) 759.
 frozen for 18 years, (32) 559.
 frozen, treatment and utilization, (35) 859.
 growers organization in Iowa, (29) 894.
 imports—
 from Argentina, (31) 95.
 into Great Britain, (27) 470; (30) 171.
 industry in—
 Argentina, (28) 365; (29) 870.
 Pennsylvania, (26) 667.
 Philippines, (26) 666.
 jerked, industry in Argentina, (31) 75.
 kidney, extractive material in, (26) 154.
 meal, notes, (29) 765.
 prices as affected by cold storage, (28) 871.
 prices in Ireland, (31) 96.
 production—
 as affected by plane of nutrition, (33) 265.
 experiments, (26) 599.
 importance of silage in, (29) 69.
 in Argentina, (30) 171.
 Florida, (27) 672.
 southern Texas, (30) 468.
 the South, (31) 74, 367.
 United States, (30) 467.
 notes, (32) 468.
 studies, (28) 572.
 products, freezing and salting, in South America, (31) 367.
 proteins, studies, (39) 201.
 ratio of bone to meat, (40) 555.
 retail buying, (29) 194.
 scrap—
 analyses, (26) 165, 362, 468, 568, 665; (27) 68, 570, 670, 774, 872; (28) 265, 464, 572, 669, 769; (29) 270, 271, 467, 666, 769; (30) 68, 169, 565, 868; (31) 73, 569, 663; (32) 169, 568, 667, 862; (33) 371; (34) 169, 263, 566, 665; (35) 867; (36) 667, 765.
 for growing chicks, (37) 768.
 for laying hens, (31) 569.
 v. cottonseed meal for chicks, (30) 571; (31) 473.

Beef—Continued.

- selection and cooking, (38) 567.
- soups, condensed, examination, (31) 659.
- storage in Philippines, (26) 262.
- studies of various cuts, (28) 163.
- supply of United States, (29) 770.
- supply, world's, notes, (28) 72.
- tallow, determination in lard, (30) 110.
- temperatures for roasting, (35) 267.
- v. buffalo meat, nutritive value, (26) 355.

Beehive, Nicolson observatory, (40) 264.

Beehives—

- cement, tests, (29) 653.
- heat insulators, (40) 64.

Beekeepers—

- Association of Ontario, report, (27) 759; (30) 59; (31) 554; (35) 262; (36) 659; (38) 264.
- associations of Ontario, (27) 39.

Beekeeping—

- and honey production, (39) 468, 565.
- as a school subject, (33) 791.
- experiments, (40) 759.
- extension work in, (38) 164.
- fairs and exhibitions concerning, (28) 796.
- for Connecticut, (39) 768.
- for West Virginia, (40) 170.
- guide, (28) 257.
- handbook, (26) 253, 658; (29) 57; (33) 563; (34) 362, 556, 657; (35) 164; (40) 264.
- in Australasia, (38) 564.
- British Columbia, (26) 151; (30) 856.
- British Guiana, (40) 358.
- Canada, (27) 356, 662; (36) 58, 158.
- Florida, (40) 358.
- Germany, (30) 759; (32) 759.
- Guam, (32) 753; (35) 856.
- Illinois, (39) 661.
- Indiana, (27) 452.
- Iowa, (30) 759.
- Maine, (40) 264.
- Montana, (28) 352.
- North Carolina, (36) 555.
- Ontario, (33) 159; (38) 264, 660; (40) 264.
- Oregon, (32) 352.
- Pennsylvania, (39) 869.
- Philippines, (30) 442; (34) 635; (38) 460.
- Porto Rico, (26) 62; (31) 354; (33) 459.
- Rhode Island, (27) 857.
- Tennessee, (29) 458.
- Texas, (27) 864; (35) 262.
- Tunis, (26) 253; (27) 458.
- war time, (39) 566, 869; (40) 358.
- Wisconsin, (35) 261.
- investigations, (29) 859; (32) 847.
- Mendelian methods in, (29) 860.
- monograph, (29) 761.
- notes, (26) 456; (27) 856; (28) 279; (29) 252; (30) 661; (31) 340, 354; (32) 448, 556, 852; (33) 98, 746; (34) 95, 758; (35) 461, 467, 499; (37) 360; (38) 660, 762.
- Pearce method, (39) 768.
- relation to spraying, (35) 662.
- treatise, (36) 158; (37) 568, 769.

Beer—

- composition, (36) 864.
- home manufacture, (40) 116.
- industry in Philippines, (29) 118.
- methods of analysis, (27) 205.
- osmotic pressure and electrical conductivity of, (30) 523.

Yeast—

- dried, for horses, (30) 175.
- dry, analyses and feeding value, (29) 467.
- for cows, (32) 871.

Bees—

- and their diseases, notes, (34) 656.
- and their management, handbook, (38) 364.
- arsenic in, (36) 59.
- as affected by—
 - arsenical sprays, (32) 244.
 - weather, (37) 854.
- as carriers of—
 - fire blight, (37) 53; (39) 251.
 - pathogenic microorganisms, (31) 849.
- behavior in winter, (31) 254, 553.
- brood diseases of, (31) 655; (35) 761.
- census in Nebraska, (40) 194.
- collection of pollen by, (28) 561; (34) 556.
- crossing experiments, (36) 258.
- digestion in, (30) 856.

Bees—Continued.

- disease, unusual, (39) 566.
- diseases, studies, (39) 468.
- distribution of pear blight by, (33) 149.
- domesticating, (27) 564.
- Egyptian, bionomics, (38) 264.
- embryology, treatise, (34) 362.
- enemies of, (31) 553.
- experimental work with, (38) 659.
- eyeless drone, (40) 759.
- feeding, (37) 467.
- fertile-worker, notes, (27) 865; (30) 759.
- food consumed by, (31) 61.
- formic acid in, (32) 507.
- foulbrood, *see* Foulbrood.
- from west coast of South America, (37) 357.
- handbook, (27) 759.
- in Germany, (33) 296.
- in India, (39) 862.
- Indian, domestication, (37) 855.
- infectious diarrhea of, (37) 360.
- inheritance in, (29) 860; (33) 159.
- insects affecting, (26) 63; (27) 459.
- inspection, (37) 262.
- inspection in Colorado, (27) 756.
- inspection law in Michigan, (31) 554.
- Isle of Wight disease—
 - notes, (37) 360; (39) 768, 869.
 - studies, (27) 458, 761; (29) 761; (40) 65.
- loss from foulbrood and poor management, (28) 450.
- Malpighian tubules of hind intestine, (38) 467.
- manipulation of wax scales, (28) 62.
- mason, notes, (33) 253.
- mason, treatise, (32) 758.
- mating, (38) 659.
- Megachile, pollination of alfalfa by, (31) 831.
- Melipona, dipterous enemies of, (31) 255.
- Moka, notes, (27) 865.
- mouth parts of, (35) 365.
- muscular coat of ventriculus, (40) 760.
- native, of Paraguay, (27) 564.
- new species, descriptions, (26) 63.
- new species from Africa, (39) 566.
- notes, (27) 662; (29) 761; (30) 554; (34) 796.
- odors emitted by, (37) 459.
- of genus Perdita, (39) 566.
- olfactory sense, (34) 758.
- on farms in United States, (31) 167.
- papers on, (38) 256.
- parasites of, (26) 882.
- pollination of—
 - alfalfa by, (31) 134; (39) 661; (40) 264, 760.
 - apples by, (31) 554.
 - cotton by, (40) 458.
 - cranberries by, (26) 858; (30) 143; (31) 741.
 - flowers by, (30) 454.
 - plums by, (36) 536.
 - prunes by, (36) 536.
 - red clover by, (27) 559.
 - sunflowers by, (32) 556.
- prevention of natural swarming, (33) 159.
- protozoa affecting, (26) 457; (27) 459.
- queen—
 - artificial fertilization, (32) 453.
 - candy for, (27) 865.
 - fertilization, (39) 264.
 - mating, (40) 655.
 - notes, (33) 698.
 - rearing, (29) 57; (36) 857; (38) 865; (40) 65, 264.
 - rearing and shipping, (34) 556.
 - relation to fire blight, (35) 662; (36) 59; (38) 164.
 - relation to horticulture, (38) 264.
 - removing from hollow trees, (35) 856.
 - role in pollination, (38) 747; (40) 638, 655.
 - role in production of beet seeds, (30) 39.
 - scent producing organ, (32) 352.
 - segmentation of abdomen, (40) 170.
 - sense organs on mouth parts, (37) 360.
 - shipment, (40) 760.
 - spider enemies of, (31) 159.
 - swarming, (35) 365.
 - swarming, control, (26) 457.
 - transferring, (35) 467; (39) 566.
 - treatise, (34) 362.
 - usefulness in agriculture, (27) 359.
 - value in coffee pollination, (26) 63.
 - value in horticulture, (32) 853.
- wild—
 - of Iowa, (32) 833.

- Bees**—Continued.
 wild—continued.
 pollination of alfalfa by, (26) 633.
 relation of *Nosema apis*, (27) 761.
 treatise, (35) 468.
 wintering, (34) 158, 454; (36) 158, 855; (37) 360;
 (38) 385; (39) 264, 762; (40) 64, 547, 760.
 wintering in Canada, (36) 58.
 wintering in Ontario, (38) 564.
- Beeswax**—
 abnormal, notes, (27) 615.
 analyses, (35) 203.
 character of samples, (27) 208.
 methods of analysis, (28) 511.
 of Philippines, analyses, (36) 711.
 refractive index, (26) 509.
- Beet**—
 aphid—*see also* Sugar beet root louse.
 black, parasites of, (31) 757.
 black, studies, (31) 754.
 remedies, (29) 454.
 army worm, *see* *Laphygma exigua*.
 blight, causes, (27) 544.
 blight, studies, (34) 349.
 caterpillar, striped, studies, (29) 455.
 chips—
 analyses, (26) 266, 267, 363.
 dried, methods of analysis, (29) 311.
 fermenting power, (31) 413.
 storing with lactic acid ferments, (30) 614.
 curly leaf disease, studies, (38) 360.
 disease, new, in northern France, (36) 543.
 diseases—
 in Sweden, (28) 847.
 in Switzerland, (37) 47.
 notes, (30) 47, 148, 647; (31) 747.
 studies, (26) 142.
 treatment, (30) 244; (39) 52.
 dry rot, artificial infection with, (30) 648.
 extracts, effect on fat content of milk, (26) 673.
 fly, *see* *Pegomyia hyosevami*.
 foliage, dried, acidity, (35) 770.
 gummosis, notes, (35) 742.
 heart rot, notes, (31) 344.
 juice, clarification, (31) 117.
 juice, clarification, (26) 505.
 juice, viscous fermentation, (38) 317.
 leaf diseases, notes, (28) 649.
 leaf maggot, notes, (28) 752.
 leaf silage, analyses, (26) 770; (29) 367.
 leafhopper—
 host plants, (37) 847.
 natural enemies, (33) 747.
 notes, (26) 452.
 relation to curly top, (33) 743; (34) 646; (39) 763.
 studies, (38) 360; (39) 464, 763.
- leaves**—
 analyses, (27) 570.
 dried, analyses, (26) 266, 362.
 feeding value, (33) 268.
 fermenting with lacto-pulp, (27) 170.
 preservation with lactic acid starter, (31) 467.
 meal, analyses, (30) 16.
 meal, manufacture and use, (29) 161; (30) 15.
 mildew, notes, (30) 748.
 molasses, composition and use, (37) 416.
- nematodes**—
 rearing on agar, (33) 547.
 review of investigations, (28) 446.
 studies, (27) 248.
- plant louse**—
 in northern France, (30) 251.
 life history, (31) 652.
- pulp**—
 analyses, (27) 570, 670; (28) 464; (29) 367, 467;
 (32) 862.
 as affected by water and vinasse, (27) 210.
 digestibility, (29) 367.
- pulp, dried**—
 analyses, (26) 72, 165, 362, 568, 665, 768; (27) 371, 570, 774, 872; (28) 265, 364, 464, 669;
 (29) 270, 570, 666, 769; (30) 67, 68, 169, 371,
 565, 868; (31) 73, 168, 366, 467, 663; (32) 169,
 259, 568, 667, 862; (33) 71, 371, 665; (34) 72,
 169, 263, 371, 467, 566, 665, 767; (35) 373, 374,
 562, 867; (36) 167, 268, 667, 765; (37) 268, 471,
 767; (38) 67, 369, 572, 665; (39) 167, 270, 370,
 773; (40) 72, 571, 665.
- Beet**—Continued.
 pulp, dried—continued.
 digestibility, (31) 766.
 feeding value, (33) 783.
 for cattle, (27) 673; (28) 174.
 notes, (27) 775.
- pulp**—
 effect on milk, (28) 674.
 ensiled v. dried, for oxen, (32) 770.
 feeding value, (26) 468; (33) 267; (39) 474.
 fermenting with lacto-pulp, (27) 170.
 for calves, (39) 382.
 for dairy cattle, (30) 774.
 for livestock, (30) 868.
 moistened, for cows, (34) 773.
 plain and molasses, for cows, (30) 176.
 residues for farm stock, (33) 267; (35) 373.
- root**—
 gummosis, notes, (40) 844.
 knot, notes, (39) 52.
 rot, notes and treatment, (27) 47.
 scab, treatment, (33) 848.
 tumors, notes, (29) 153.
- rot, notes**, (26) 446, 747.
rust, notes, (32) 750.
scab, studies, (33) 547.
- seed**—
 as affected by light, (29) 332.
 cultivation and harvesting, (26) 42.
 determination of moisture content, (27) 615.
 from different size seed balls, germination,
 (31) 232.
 germination energy of, (29) 332, 538.
 germination tests, (29) 740; (35) 442; (36) 339, 837; (37) 829.
 germinative ability, (30) 439.
 growing in Canada, (34) 635.
 meal, analyses, (26) 714.
 planting in sectional cylinders, (31) 633.
 rôle of bees in production of, (30) 39.
 small, value, (30) 39.
 soaked, germination, (27) 838.
 valuation, (33) 135.
- silage, composition and digestibility**, (31) 467.
silage, nutritive value, (26) 360.
- sugar**—
 by-products, analyses, (39) 417.
 detection in cane products, (36) 112
- sugar industry**—
 in Europe, (28) 336; (30) 614.
 1910, (26) 439.
 1913, (33) 615.
 Russia, (26) 693.
 United States, (26) 94; (28) 294, 335
 (39) 237; (40) 139.
 notes, (28) 89.
- sugar manufacture**—
 history, (27) 413.
 losses in, (26) 116.
 progress in 1912, (30) 510.
 treatise, (28) 413.
- sugar**—
 nitrogen content, (30) 529.
 products, methods of analysis, (27) 205.
 products, polarization, (27) 813.
 ratio of ash to organic msugars, (26) 711.
 raw, raffinose content, (26) 711.
 v. cane sugar for fermentation purposes,
 (35) 718.
- sugarhouse waste, potash from**, (37) 817; (39) 808.
- top silage, analyses**, (29) 367.
- tops**—
 analyses and feeding value, (34) 664.
 and shocked corn, silage from, (28) 873.
 ensiling with lactic acid bacteria, (32) 567.
 for dairy cattle, (30) 473.
 fresh and dried, analyses, (31) 864.
- tyrosinase, notes**, (35) 414.
- webworm**—*see also* *Loxostege sticticalis*.
 Hawaiian, notes, (29) 456.
 Hawaiian, studies, (26) 249.
 notes, (28) 158.
 southern, studies, (26) 250.
 spotted, studies, (29) 455.
- yellow, notes**, (35) 245.
- Beetle**—
 larvae, fumigation, (40) 256.
 mites, synopsis, (37) 858.

Beetles—

- bark-boring, notes, (26) 456.
- cerambycid, injurious to figs, (26) 147.
- coccinellid—
 - fumigation, (39) 463.
- parasitic on citrus mealybug, (26) 149.
- hydrophilid, new, (40) 265.
- in sugar plantations in Java, (35) 467.
- injurious—
 - in Porto Rico, (34) 753.
 - to babul, (27) 863.
 - coconut palm, (29) 858; (33) 154; (39) 159.
 - cotton in Arizona, (38) 61.
 - fruit and flowers, (36) 654.
 - fruit buds, (35) 363.
 - persimmons, (27) 458.
 - sugar cane, (28) 752; (29) 858.
- longicorn, in Australia, (36) 360.
- of Philippines, (36) 257.
- predaceous—
 - as insect destroyers, (27) 560.
 - packing for shipment, (26) 350.
- respiratory activity in sunlight, (34) 30.
- treatise, (40) 552.

Beets—

- anomalies in, (35) 436; (37) 28.
- as affected by—
 - fertilizers, (29) 332.
 - smoke and fine dust, (26) 38.
 - spacing, (31) 633.
- as source of alcohol, (36) 508.
- assimilation of carbohydrates by, (26) 626.
- atavistic, composition, (29) 430.
- breeding experiments, (35) 442; (39) 542.
- canning, (39) 165.
- catalytic fertilizers for, (30) 627.
- cell size in, (36) 229.
- characteristics and variations in, (28) 538.
- color zones in, (36) 837.
- combined fungus attacks on, (35) 245.
- composition—
 - and yield as affected by sodium salts, (29) 420.
 - as affected by fertilizers, (28) 124.
 - of offspring of, (29) 833; (31) 529.
- cooperative experiments, (29) 138.
- crude fat of, (28) 201.
- culture, (26) 393.
- culture experiments, (29) 331; (34) 228.
- culture for feeding purposes, (32) 220.
- Cytospora batata attacking, (39) 456.
- determination of marrow content, (26) 117.
- dry matter content, (26) 436.
- effect on—
 - following crop, (32) 223; (40) 624.
 - milk, (34) 671.
 - soil moisture, (34) 17.
- electrical stimulation, (26) 136; (40) 428.
- fermenting power, (31) 413.
- fertilizer experiments, (26) 43, 522, 817, 819; (27) 125, 137; (28) 723, 735; (29) 23, 25, 127, 632; (30) 124, 435; (31) 29, 31, 36, 820; (33) 219; (34) 431, 517, 532, 622, 723; (35) 126, 218, 325, 425, 427, 519; (36) 132, 217; (38) 218, 820; (39) 130.
- field, *see* Mangels.
- fodder, analyses, (26) 267.
- following alfalfa, (39) 130.
- food value, (36) 863.
- for dairy cattle, (34) 873.
- fresh and ensiled, feeding value, (30) 371.
- from same seed ball, characteristics, (31) 633.
- fungicidal treatment, (29) 326.
- genetic studies, (27) 33.
- germination as affected by fertilizers, (29) 327.
- green manuring experiments, (39) 31.
- growth as affected by—
 - fertilizer salts, (29) 329.
 - manganese salts, (33) 725.
 - sulphur, (29) 215.
- hail injury to, (35) 734.
- in silage, (33) 468.
- inheritance of—
 - characters in, (29) 832.
 - form and color in, (29) 332.
 - shortened development, (39) 734.
- inoculation, (29) 326.
- insects affecting, (26) 454; (31) 58; (32) 848.
- invertase in, (34) 524.
- irrigation experiments, (32) 186; (33) 827.

Beets—Continued.

- leaf growth and sugar formation, relationship, (30) 638; (31) 834.
 - liming experiments, (40) 134.
 - methods of analysis, (31) 18.
 - methods of variety testing, (26) 436.
 - mother, isolation of flower stalk, (33) 832.
 - muck and lime for, (40) 134.
 - mulching v. clean culture, (33) 534.
 - nematodes affecting, (27) 352; (28) 547; (30) 244.
 - nitrogen appropriation by descendants, (29) 832.
 - nitrogen content, (30) 209.
 - phosphatic fertilizers for, (35) 23.
 - plant lice affecting, (28) 354.
 - pollination of sugar beets by field beets, (26) 332.
 - pollination studies, (36) 522.
 - potassium fertilizers for, (26) 526.
 - preservation by pressure, (32) 416.
 - radioactive fertilizers for, (35) 628.
 - reducing sugars in, (38) 731.
 - relative yielding capacity, (40) 625.
 - resistance to cold, (39) 525.
 - root deformation affecting, (27) 544.
 - root systems, (31) 515.
 - Russian, sugar content, (26) 738.
 - seed production of different sizes, (30) 234.
 - steamed, composition and digestibility, (31) 467.
 - steaming and ensiling, (31) 467.
 - storage, formation of invert sugar in, (30) 15.
 - storage, winter, (38) 442.
 - sugar, *see* Sugar beets.
 - sugar content—
 - in relation to weight, (35) 640.
 - of root and character of descendants, (29) 832.
 - sulphur as fertilizer for, (28) 740; (30) 138; (34) 331.
 - top-dressing with sodium nitrate, (32) 223.
 - v. silage for milk production, (34) 670.
 - variability of descendants, (29) 832, 833.
 - varieties, (26) 733; (32) 528; (36) 36, 837.
 - wild, selection experiments, (31) 330.
 - yields, (28) 533.
 - yields in relation to rainfall, (34) 319.
- Befri, culture, (32) 226.
- Beggar weed—
- culture, (30) 335; (32) 226.
 - culture experiments, (30) 229, 632.
 - culture in Philippines, (26) 361.
 - culture under dry farming, (30) 435.
 - hay, analyses, (26) 362.
 - hay, ground, analyses, (34) 767.
 - varieties, (30) 229, 434.
- Beggiatoa spp., investigations, (28) 728.
- Begonia—
- flowers, abnormal, studies, (34) 225.
 - leaf blight nematode, (36) 52.
 - spot disease, notes, (27) 848.
- Behar hairy caterpillar, notes, (27) 54.
- Behenic acid, notes, (31) 312.
- Belah as lignum vitae substitute, (40) 640.
- Belascaris marginata, studies, (40) 186.
- Belgian League of Family Education, (40) 699.
- Belladonna—
- alkaloids in, distribution, (31) 201.
 - alkaloids in, selection for, (34) 237.
 - alkaloids in, variation, (30) 44.
 - as affected by composition of soils, (34) 18.
 - breeding experiments, (30) 631.
 - breeding for atropin, (37) 44.
 - culture, (36) 538.
 - improvement by selection, (32) 143; (35) 443.
 - leaf miner, *see* Pegomyia hyoscyami.
 - root disease, (40) 844.
 - seed, germination, (32) 626; (37) 545.
- Belle Fourche—
- project in 1917, (40) 391.
 - reservoir as a bird reservation, (37) 355.
- Bellwort, seed formation in, (31) 225.
- Belostoma (=Zaitha) flumineum, death feigning, (27) 457.
- Belts—
- and pulleys, selection, (31) 590.
 - pulling power, (29) 389.
 - transmitting power, (28) 187; (30) 190.
 - use and care, (30) 89, 458.
- Bembex spp., bionomics, (35) 463.
- Bembicini, revision, (40) 234.

- Bengal**—
beans, destruction of scale insects by, (26) 534.
grass, culture, (37) 136.
Veterinary College, report, (26) 578; (31) 177;
(32) 678.
- Benni seed**, culture experiments, (32) 227.
- Bent grasses**, agricultural species, (39) 532.
- Benteak**, notes, (29) 443.
- Benzaldehyde**—
determination, (39) 807.
determination in liquors and cordials, (26) 99.
manufacture, (36) 300.
- Benzene**—
derivatives, insecticidal value, (37) 559.
effect on—
production of antibodies, (35) 781.
soil microorganisms, (31) 27.
soils, (37) 519.
sterilization of soils by, (32) 816.
- Benzin**—
locomotive, tests, (30) 388.
petroleum, as vermifuge, (38) 884.
petroleum, detection in ethyl alcohol, (29) 312.
v. turpentine for thinning paint, (33) 91.
- Benzoic acid**—
aerobic fermentation, (30) 28.
and guaiacol solution, antiseptic value, (39) 885.
as acidimetric standard, (28) 206; (31) 501.
as food preservative, (30) 364.
detection in cheese, (32) 313.
detection in coffee, (27) 613.
detection in fats, (28) 208.
detection in foods, (27) 715; (28) 411.
detection in milk, (26) 610; (28) 809.
determination, (26) 609; (28) 313; (39) 807.
determination in—
animal foodstuffs, (35) 112.
chopped meats, (33) 15.
prunes and cranberries, (33) 15.
effect on—
bread fermentation, (27) 268.
butter and margarin, (26) 778.
composition of urine, (31) 761.
cyanogen formation in plants, (28) 527.
hemolytic reaction, (36) 878.
meat, (29) 266.
metabolism of pigs, (30) 269.
the animal organism, (32) 164.
in soils, (30) 610.
isolation from soil, (37) 710.
manufacture, (36) 300.
methods of analysis, (33) 414.
physiological effect, (27) 365.
preparation, (30) 803.
toxicity, (28) 661.
- Benzol**—
derivatives, bactericidal action of, (31) 279.
detection in ethyl alcohol, (29) 312.
injections, effect on formation of antibodies,
(35) 679.
- Benzyl alcohol**—
antiseptic value, (40) 884.
utilization by plants, (36) 329.
- Berberidaceae**, oils and alkaloids of, (36) 628.
- Berecynthus** n.spp., descriptions, (35) 761.
- Berberi**—
among English soldiers, eradication, (35) 369.
among Philippine scouts, (33) 261.
among Philippine scouts, disappearance, (27)
66.
and cottonseed meal poisoning in pigs, (34) 474.
cause and prevention, (29) 463.
dietary factors in, (35) 167.
disease resembling, in rice meal fed pigs, (33)
775.
etiology, (26) 264; (28) 168, 185, 569, 763, 764; (30)
285; (31) 857.
experimental, studies, (32) 563.
in Brazil, (34) 462.
infantile—
in Manila, (29) 270.
relation to milk, (30) 861.
treatment, (34) 662.
notes, (33) 579; (31) 662; (40) 565.
prevention, (28) 761; (31) 555, 762, 858; (32) 163;
(35) 472.
prevention and treatment, (28) 764.
relation to—
bacterial fermentation of rice, (29) 269.
diet, (26) 264; (29) 180, 460; (30) 367, 764; (31)
761; (36) 264; (38) 268.
- Berberi**—Continued.
relation to—continued.
experimental polyneuritis, (33) 167.
glands of internal secretion, (33) 365.
oryzanin, (28) 168.
rice diet, (27) 461; (28) 360; (32) 67.
vitamin, (28) 261.
white flour, (27) 868.
review of investigations, (34) 462; (36) 161, 363.
similarity to zeism, (31) 464.
studies, (26) 155, 871; (29) 664; (30) 63, 687; (31)
463; (35) 666, 861; (40) 273, 363, 565, 662, 868.
theory of, (29) 169.
treatise, (32) 858; (33) 365.
treatment, (38) 782.
treatment with constituents of rice polishings,
(34) 367.
- Bermuda grass**—
alkali tolerance, (29) 330.
as forage crop, (31) 829.
as pasture crop, (37) 533.
breeding experiments, (40) 624
culture, (29) 830.
culture and use, (37) 440.
culture experiments, (34) 227.
culture in cotton belt, (32) 534.
culture in Hawaii, (32) 730.
distribution, (26) 332.
eradication, (29) 330; (39) 842.
for cut-over lands, (39) 231.
giant, notes, (37) 29.
hay, chloroform extract of, (31) 71.
hay, composition, (27) 668.
hay, digestibility, (27) 669; (31) 863; (37) 168.
hay, grades of, (34) 528.
hay, mineral constituents, digestibility, (40) 769.
notes, (26) 361.
pasture experiments, (40) 32.
root system, (36) 438.
seed, germination tests, (28) 534.
seed, sulphuric acid treatment, (40) 234.
- Berocera madagascariensis**, notes, (29) 855.
- Berry**—
anthracnose, description, (31) 449.
baskets and containers, standards for, (35) 598.
diseases and pests in Baden, (31) 539.
diseases, notes, (27) 848; (30) 240, 746; (31) 841;
(33) 444.
pigments, notes, (31) 728.
wine, diminution of acidity in, (29) 117.
- Berries**, see Fruit, small, and Raspberry, Straw
berry, etc.
- Berseem**—
as forage plant, (36) 167.
culture in—
Egypt, (38) 338.
India, (39) 230, 238.
Italy, (39) 238.
Rhodesia, (27) 32, 637.
description and use, (30) 733.
notes, (29) 140.
varieties, (30) 434; (37) 233.
yields in Australia, (38) 133.
- Besnoitia besnoiti** n.g., studies, (37) 81.
- Bessey**, C. E., biographical sketch, (32) 599.
- Betain**—
as affected by microorganisms, (33) 312.
assimilation by plants, (26) 32.
effect on inversion of sucrose, (28) 613.
extraction from molasses refuse, (26) 612; (28)
413.
formation in animals and plants, (30) 803.
in grape leaves, (27) 731.
hops, (32) 502.
malt sprouts, (26) 24.
rice polishings, (33) 167.
sugar beets, (28) 810.
tobacco leaves, (28) 109.
isolation from oat farina, (31) 309.
localization in plants, (31) 108.
studies, (26) 713; (27) 203, 204; (28) 312.
- Betel-nut palm**—
"band" disease, (37) 457.
culture in North Kanara, (34) 239.
diseases, notes, (36) 348, 449; (38) 647.
plague, notes, (29) 446.
- Betel-vine** leaves, analyses and bleaching, (31) 108;
(36) 110.
- Betic acid** from Douglas fir resin, (30) 10.
- Betonia officinalis**, betains in, (27) 204; (28) 312; (31)
309.

- Betonicin—
 notes, (28) 312.
 properties, (31) 309.
 synthesis, (31) 310.
- Better Farming Association of North Dakota,
 report, (28) 387.
- Betula—
 in Minnesota, (39) 30.
 lenta, twig canker affecting, (30) 543.
- Beverages—
 adulteration, detection, (26) 312; (27) 207.
 alcoholic, examination, (26) 69.
 analyses, (29) 362; (30) 165, 258; (32) 64, 456; (34)
 67, 762; (39) 669.
 and dishes of the old South, (31) 557.
 and vinegars, homemade, (40) 116.
 bottled, sugar substitutes in, (40) 68.
 carbonated, analyses, (28) 862.
 carbonated, examination, (27) 665.
 detection of saccharin in, (26) 506.
 detection of saponin in, (27) 505.
 examination, (26) 69, 157, 355; (27) 64; (28) 566,
 862; (30) 666; (31) 67, 166, 358, 462, 557, 658
 (36) 262.
 handbook, (28) 163.
 infection by pathogenic bacteria, (35) 264.
 inspection in—
 Alabama, (33) 66.
 Argentina, (26) 762.
 California, (30) 558.
 Canada, (32) 64.
 Florida, (33) 66.
 France, (35) 765.
 North Dakota, (28) 259, 457.
 South Dakota, (28) 661; (33) 67.
 law in Wyoming, (27) 767.
 methods of analysis, (27) 499; (29) 412, 800; (32)
 109; (33) 258.
 nonalcoholic carbonated, examination, (34) 166.
 nonalcoholic, hygienic notes, (32) 356.
 preparation, (32) 253.
 registration in North Dakota, (27) 165; (31) 657.
 temperature at ingestion, (31) 462.
 treatise, (28) 565; (32) 162; (36) 63.
 turbidity, (36) 808.
- Bhindi, bollworms attacking, (38) 54.
- Bhringi, description and culture, (40) 231.
- Biblio—
 abbreviatus, notes, (36) 552.
 albipennis, notes, (33) 253.
 hortulanus, biology and remedies, (32) 248.
 johannis, larval and pupal stages, (39) 154.
 nervosus, notes, (32) 651.
- Bibliographical mediums, scientific, as affected by
 the war, (40) 304.
- Bibliography of—
 Abderhalden reaction, (36) 381.
 Abderhalden's serodiagnosis, (32) 179.
 abnormal bone growth in absence of function-
 ing testicles, (26) 471.
 abortion, (27) 581; (39) 83, 681.
 abortion, epizootic, in mares, (30) 586.
 abortion in cattle, (29) 779; (31) 286; (32) 581;
 (34) 880; (38) 588.
 Abutilon moth, (30) 157.
 Acridiidae of Minnesota, (31) 650.
 African Coast fever, (28) 478.
 Agchylostoma duodenale, (32) 759.
- agricultural—
 and industrial education, (36) 291.
 associations in Posen and West Prussia,
 (34) 893.
 college organization and administration,
 (35) 297.
 cooperation, (29) 90; (33) 91.
 agricultural cooperation—
 and marketing, (28) 593.
 in United States, (38) 595.
 in various countries, (31) 389.
- agricultural—
 credit, (32) 389, 489; (33) 787.
 credit and cooperation, (30) 296; (31) 490.
 credit in Europe, (31) 389.
 development of Minnesota, (33) 786.
 education in Russia, (37) 793.
 engineering, (35) 94; (36) 400.
 labor, (31) 593.
 organizations, (30) 593.
 statistics, (40) 594.
 statistics, international, (33) 295.
- Bibliography of—Continued.
 agriculture, (27) 299; (28) 488, 492; (29) 598.
 agriculture—
 and rural life, (31) 692.
 elementary, (33) 95.
 in Abyssinia, (30) 434.
 Argentina, (27) 193; (32) 364.
 public schools, (26) 191, 898.
 United States, (32) 891.
 secondary, (39) 692.
 agronomy, (28) 638.
 air, bacterial analysis, (33) 611.
 albumoses in body tissues and blood, (38) 366.
 alder flea-beetle, (39) 65.
 Aleochara bilineata, (33) 862.
 alfalfa, (26) 632; (28) 737.
 alfalfa—
 crown gall, (40) 844.
 hopper, (32) 652.
 seed, (32) 38.
 algae, (28) 822.
 alkali salts, effect on crops, (34) 126.
 almonds, culture, (39) 846.
 amoebae, (27) 477.
 ammonium phosphate, fertilizing value, (39)
 624; (40) 221.
 amphibians of Pennsylvania, (31) 648.
 Amphistomum subtriquetrum, (33) 659.
 anaphylaxis, (26) 481; (32) 79; (38) 181.
 anaplasmosis, (33) 281.
 anatomy, (32) 860.
 anatomy of vertebrates, (28) 668.
 anatomy, pathologic, (27) 576; (31) 277.
 anemia, pernicious, in horses, (33) 681; (35) 80.
 aneurism, verminous, in horses, (37) 82.
- animal—
 breeding, (28) 492, 583, 667; (32) 860; (34)
 370.
 diseases, (36) 478.
 ecology, (30) 454; (32) 549.
 heat and bio-energetics, (26) 265.
 hybrids, (26) 163.
 parasites affecting livestock, (33) 279.
 parasites of Colorado, (26) 865.
 parasites of man, (36) 152, 354.
 production, (31) 467; (32) 566; (36) 468.
 regeneration, (28) 68.
- animals—
 domestic, of ancient Egypt, (27) 371.
 feeding under germ-free conditions, (34) 564.
 wanderings of, (31) 57.
- Anoplocephalidae, (33) 863.
- Anteoninae, (40) 265.
- antelmintics, (28) 80.
- anthocyanin, (33) 627; (37) 633.
- anthrax, (34) 781.
- anthrax serum, (40) 84.
- anthrax spores, disinfection, (31) 677.
- antibodies, fate in precipitin reaction, (34) 878.
- ants, (40) 547.
- ants of Great Britain, (35) 262.
- aphids, (28) 252.
- aphids, alternate hosts, (39) 464.
- aphis, woolly, (28) 252; (32) 849; (34) 654.
- apple—
 bitter pit, (31) 244; (37) 456.
 maggot, (29) 561; (32) 155.
 rust, (34) 54.
 scab, (30) 848; (31) 645.
 tree borer, roundheaded, (39) 664.
- apples—
 abscission of flowers and fruits, (38) 745.
 cross pollination, (39) 645.
 culture, (30) 739.
 description of, (32) 744.
 thinning experiments, (37) 449.
- aquiferous vessels in plants, (35) 224.
- Argentine ant, (29) 563.
- army worm, (33) 58; (34) 455.
- army worm, fall, (30) 656.
- arsenicals for protection of plants, (30) 236.
- arteriosclerosis in animals, (26) 375.
- Ascochyta, (28) 845.
- Ascochyta clematidina, (33) 650.
- asexual reproduction in monocotyls, (30) 532.
- ash content of growing pigs, (32) 72.
- asparagus, (31) 739.
- asparagus beetle, 12-spotted, (29) 556.
- asparagus miner, (29) 556.

Bibliography of—Continued.

- associative action of bacteria with lactic organisms, (29) 9.
- auchmeromyids, (30) 458.
- Audubon, the naturalist, (39) 654.
- avian cestodes, (26) 561.
- Azotobacter chroococcum, (28) 524; (33) 329.
- Azotobacter, inoculation of soil with, (40) 619.
- Bacillus cyanogenes, (32) 776.
- bacillus of Preisz-Nocard, (34) 186.
- Bacillus—
 - radicicola of field peas, (33) 330.
 - typhi gallinarum alcalifacens, (30) 385.
 - typhosus in milk, (26) 777.
- bacteria, (27) 780.
- bacteria, freezing, (40) 181.
- bacteria in intestinal tract of calves, (35) 282.
- bacterial flora of large intestine of horses, (29) 466.
- bacteriology, (29) 626; (32) 578; (37) 311; (39) 190.
- bacteriology—
 - agricultural, (28) 34, 524.
 - in dairy industry, (33) 277.
 - of eggs, (27) 73.
- Bacterium pruni, (34) 248.
- bagasse as a fuel, (27) 717.
- bakery inspection, (28) 566.
- bananas, changes in during ripening, (32) 455.
- bark beetles, Canadian, (40) 553.
- barley, (32) 40.
- barley late blight, (29) 750.
- bases, natural, (32) 201.
- bats of California, (40) 853.
- bean diseases, (39) 455.
- bean thrips, (28) 250.
- beans, Asiatic, (31) 740.
- bee disease, Isle of Wight, (27) 458; (29) 762.
- bee diseases, (27) 60; (28) 562.
- beef industry in Argentina, (28) 365.
- bees, (28) 562; (34) 362.
- bees, embryology, (34) 362.
- bees, in relation to fire blight, (38) 164.
- beet root gummosis, (40) 844.
- beet sugar industry, (28) 294.
- beet webworm, (26) 250.
- beet webworm, spotted, (29) 456.
- benzoic acid, (27) 366.
- benzoic acid and its sodium salt in animal nutrition, (32) 165.
- beriberi, (33) 365; (34) 462; (40) 566.
- biochemistry, (27) 821; (28) 607.
- biology, (26) 470; (28) 393, 765; (32) 166; (33) 167; (36) 366, 468.
- birds, (32) 447, 898; (33) 451, 553.
- birds—
 - as carriers of fungus diseases, (32) 56.
 - British, feeding habits, (30) 249.
 - game, of California, (40) 646.
 - of America, (38) 652.
 - Colorado, (26) 855.
 - Connecticut, (30) 454.
 - Isle of Pines, (36) 653.
 - Michigan, (27) 550.
 - parasites of, (39) 556.
- black scale, (26) 556.
- blood cells, (32) 874.
- blood of domestic animals, (38) 481.
- blood of insects, (28) 853.
- blood sugar, determination, (40) 310.
- blueberries, (38) 43.
- bone structure of animals, (28) 767.
- Bordeaux mixture, (28) 537; (36) 549.
- botany, (26) 597; (27) 31; (29) 327, 626; (30) 223; (37) 630.
- Botrytis cinerea on peony, (40) 844.
- Botrytis, parasitic on pepper and lettuce, (28) 848.
- brachymelia in domestic animals, (26) 472.
- bread making, (31) 657.
- breeding experiments with vegetables, (35) 341.
- British ornithology, (39) 555.
- broad-bean weevil, (27) 564.
- broad-winged hawk, (26) 245.
- brown rot of fruits, (30) 352; (31) 749, 843.
- brown-tail moth, fungus parasites, (31) 251.
- bud moth, lesser, (31) 252, 756.
- bud variation in relation to fruit markings, (29) 147.
- Buddleia and Cytisus, (40) 844.

Bibliography of—Continued.

- buffalo gnats, (34) 756.
- Buprestis, (40) 266.
- butter, moldiness in, (32) 676.
- butter, rancidity, (39) 486.
- cabbage webworm, imported, (27) 159.
- cacao canker, (29) 249.
- cacao culture, (35) 145.
- cacao diseases, (27) 751; (31) 347.
- cacti, (26) 530; (33) 134.
- cactus diseases, (34) 543.
- cactus insects, (28) 452.
- caffeine, (29) 265.
- caffeine elimination, (27) 465.
- caffeine toxicity, (27) 166.
- calcium—
 - and related elements in plants, (30) 523.
 - content of cucurbits, (39) 747.
 - cyanamid experiments, (27) 128.
- Calliophialtes sp., (30) 361.
- Calosoma spp., (38) 61.
- canning and preserving, (38) 114.
- carbohydrates of mangold leaves, (28) 129.
- carbon nutrition of plants, (26) 822; (29) 324; (31) 426.
- carotin-xanthophyll group in Chrysomelidae, (34) 865.
- castration in rabbits, (34) 865.
- caterpillar bacterial diseases, (32) 554.
- cattle—
 - Aberdeen-Angus, (33) 72.
 - ancestry, (27) 172; (28) 467.
 - breeding in Mecklenburg, (26) 273.
 - feeding, (37) 172.
 - of Africa and Polynesia, (26) 472.
 - of eastern Europe, (28) 467.
 - red, of Denmark, (26) 667.
- Cecidomyiidae, British, (39) 866.
- cedar rust, (28) 244.
- celery bacterial rot, (31) 542.
- celery heart rot, (34) 244.
- cellulose decomposition in soils, (31) 25.
- cellulose-destroying bacteria and molds, (28) 628.
- cereal diseases, (30) 648, 847; (36) 542.
- cereal mildew, (40) 844.
- cereal rusts, (31) 147.
- cereals—
 - ground, in the diet, (29) 564.
 - history of, (31) 131.
 - winterkilling, (39) 441.
- cerebro-spinal meningitis in horses, (26) 787.
- chalcids injurious to forest seeds, (28) 657.
- chayote, (30) 532.
- Cheddar cheese, (30) 878.
- cheese, (26) 479.
- cheese—
 - flavor, (31) 107, 477.
 - making, (40) 283.
 - ripening, (29) 59; (31) 477.
 - soft, (34) 184.
- chemistry, (27) 14; (29) 501; (33) 201; (34) 407 (36) 600; (37) 311, 501.
- chemistry—
 - agricultural, (33) 801.
 - physical, of vital phenomena, (39) 8.
 - technical, (32) 308.
- Chermes, (34) 551.
- Chermesidae, (40) 262.
- cherries, (33) 440.
- cherry gummosis, (29) 155.
- cherry leaf beetle, (35) 261.
- chestnut—
 - bark disease, (29) 553; (31) 751; (33) 448.
 - blight, (31) 246; (32) 347; (35) 154.
 - diseases, (27) 753.
- "chestnuts" of horses, (26) 672; (28) 772.
- chicken cestode, (35) 683.
- chicory, (31) 336.
- chinch-bug fungus diseases, (26) 455.
- Chironomus (Tendipes) plumosus, (32) 554.
- Chlamydozoon bombycis, (26) 758.
- chlroid of lime in sanitation, (29) 512.
- chlorophyll, (30) 311.
- chlorophyll formation in relation to light, (33) 29.
- chlorosis of plants, (28) 153.
- chondriosomes, (29) 217; (33) 631; (35) 635.
- chromosome theory of heredity, (35) 272.
- chromosomes in wheat, (27) 636.

Bibliography of—Continued.

- chrysanthemum leaf miner, (32) 452.
 Chrysopidae of Japan, (30) 754.
 cigarette beetle, (40) 759.
 cinchona mopo seed bed disease, (34) 749.
 citrus—
 fruits, (26) 441; (28) 742; (30) 444; (33) 441.
 malnutrition diseases, (31) 237.
 scab, (27) 653.
 white fly, (32) 349.
 climate—
 changes in, (30) 815.
 in relation to tropical agriculture, (30) 317.
 of California, (31) 213.
 of Michigan, (39) 320.
 climatology, (38) 317.
 climax forests, (28) 842.
 club root, (31) 642; (33) 52.
 Coccaceae, (34) 477.
 Coccidae, (36) 655.
 Coccidae of Porto Rico, (37) 158.
 coccinellid larvae, (36) 658.
 cocoa and chocolate, (26) 662.
 coconut—
 bud rot, (32) 150.
 insects, (31) 58.
 palm diseases, (26) 60.
 palms, (27) 146.
 pests, (34) 740.
 products, (39) 108.
 codling moth, (26) 757.
 coffee, (28) 438.
 coffee "brusca," (26) 450.
 coffee diseases, (35) 353.
 coffee industry in Abyssinia, (37) 835.
 cold resistance in plants, (30) 333.
 colloidal chemistry, (38) 820.
 colloidal solutions, (36) 108.
 colloids in biology and medicine, (27) 881.
 colon bacilli, survival of pasteurization by, (32) 775.
 color in relation to chemical constitution, (40) 505.
 color inheritance in—
 cattle and horses, (31) 266.
 horses, (30) 571.
 mammals, (32) 466.
 plants, (27) 733.
 color of shank in fowls, (32) 263.
 coloring matter of salted meats, (32) 455.
 community improvement clubs, (31) 690.
 conifer rusts, (40) 645.
 conservation of food supplies, (31) 535.
 cookery books, (29) 567.
 cooking during early history of Rome, (33) 462.
 cooperative organizations, (32) 792.
 corn, (31) 331.
 corn billbug, southern, (37) 666.
 corn characters, (28) 534.
 corn culture, (34) 337.
 corn leaf beetle, southern, (33) 359.
 corn leaf blotch miner, (31) 159.
 corn, seed, from different parts of ear, (33) 636.
 cornstalk borer, lesser, (37) 852.
 correlation—
 as a measure of relationships, (37) 621.
 in grains, (37) 141.
 in oats, (30) 38.
 of parts in cattle, (28) 68.
 Corticium javanicum, (27) 746.
 Coryneum spp. on trees and shrubs, (37) 250.
 cost of living and wages, (31) 360.
 cotton—
 boll rots, (28) 648.
 bollworm, pink, (38) 765; (39) 764; (40) 857.
 culture in Egypt, (35) 137.
 diseases in West Indies, (33) 648.
 Egyptian, (38) 533.
 insects in Africa, (31) 58.
 cottonseed products, toxicity, (35) 383; (39) 886.
 country—
 churches, (29) 190.
 life, (33) 593; (34) 635.
 life and rural schools, (28) 692.
 life, farm, and small town, (36) 93.
 cow testing associations, (29) 375.
 cowpea weevil, (28) 257.
 cows, form and function in, (30) 271.
 cranberries, (31) 742.
 cranberries, spoilage, (39) 749.

Bibliography of—Continued.

- cranberry rootworm, (33) 457.
 cream bacteria, relation to keeping quality of butter, (39) 78.
 creosoting of hardwoods, (38) 893.
 Cronartium pyriforme, (33) 449.
 crop centers of United States, (39) 735.
 crop yield tests, experimental error, (39) 829.
 crossing-over, (35) 867.
 Cryptorhynchus lapathi, (37) 465.
 culinary literature, (31) 857.
 Curculionidae of North America, (27) 259.
 currant fruit fly, (38) 466.
 currants, red, (37) 834.
 Cuscuta, (35) 460.
 cuttings, stimulation of root growth, (39) 827.
 cyanogenesis under digestive conditions, (30) 682.
 Cyanophyceae, (27) 780.
 Cylindrosporium on stone fruits, (31) 544.
 Cynipidae, gall making, of North America, (33) 857.
 cypresses, (33) 49.
 Cyrtidae, (40) 757.
 Cysticercus bovis as affected by freezing, (32) 880.
 Cysticercus ovis, (29) 888.
 Cytisus and Buddleia, (40) 844.
 daffodils, (34) 741.
 dairy husbandry, (28) 492.
 dairying, (32) 173, 566; (33) 578; (36) 468.
 dairying in Philippines, (39) 785.
 dairying in western Siberia, (26) 880.
 damping-off of coniferous seedlings, (31) 647.
 damsel flies, (39) 763.
 death feigning in insects, (27) 458.
 dendrology, (26) 240; (27) 846.
 diabetes, (32) 180.
 diamino acids in the diet, (38) 569.
 Diapheromera femorata, (26) 148.
 diet, (27) 365.
 diet deficiency diseases, (38) 569.
 diet-essential substances, (39) 370.
 diet of children, (37) 671.
 diet of Swiss workmen, (34) 661.
 dietary studies (30) 364.
 dietetics, (29) 163.
 digitalis in pneumonia, (37) 375.
 Diplozia, (34) 242.
 dipping, (34) 186.
 diptera larvae, entomophagous, (30) 458.
 diptera, parasitic, (36) 359.
 dipterous larvae, (26) 559.
 disease—
 resistance in apples, (29) 41.
 transmission, (30) 249, 553.
 transmission by blood-sucking insects, (28) 756.
 transmission by insects, (26) 150.
 diseases, (29) 652.
 diseases, insect borne, in Pan America, (34) 754.
 dog distemper, (28) 683.
 Dolichos lablab, (34) 437.
 dourine, (28) 478; (30) 85.
 drainage, (29) 785.
 drainage of swamp lands, (35) 286.
 drought resistance in Hopi corn, (30) 436.
 drug action under pathological conditions, (26) 71.
 drug plants, (33) 242, 842; (34) 236.
 drugs, dosage of, (31) 80.
 duodenal regurgitation, (34) 863.
 dust preventives, (36) 188.
 dwarf plants, (34) 336.
 early maturity in domestic animals, (26) 472.
 echinococcus disease, (27) 883.
 ecological investigations, (31) 537.
 ecology of a cat-tail marsh, (32) 151.
 economic associations of rural Poland, (31) 690.
 edaphism, (28) 718; (33) 322.
 education for the home, (33) 397.
 educational system of Denmark, (35) 695.
 egg—
 albumin, digestibility, (35) 862.
 bacteriology, (35) 174.
 production, (32) 870; (34) 470.
 production, feeding for, (38) 577.
 eggs, bacterial content and keeping quality, (32) 173.
 Eimeria spp., (30) 759.

Bibliography of—Continued.

- electrical conductivity in plants, (33) 626.
elm aphids, (30) 854.
elm bark beetle, (27) 658.
elm leaf beetle, (26) 147.
Emmental cheese, eye formation, (37) 876.
energy transformations in germinating seed, (36) 525.
enteritis, paratuberculous, in cattle, (30), 583.
entomological writings of E. T. Cresson, (36) 759.
entomology, (28) 752; (30) 52, 534, 851; (31) 349.
entomology—
 American economic, (38) 256.
 applied, (32) 448.
 Canadian, (26) 59; (27) 551; (31) 648; (33) 553; (35) 852; (38) 256.
 medical, (32) 846.
 North American, (26) 147.
Entomophthorae, parasitism, (32) 245.
Entorrhiza, (32) 749.
entozy, of Queensland, (39) 556.
enzymes as affected by mold fungi, (31) 730.
enzymes in algae, (35) 25.
epithelioma contagiosum in fowls, (30) 885.
epithelium of uterine cornua of mammals, (28) 876.
ermine moths, (28) 557.
Erysiphe graminis, (33) 847.
ethylene, effect on plants, (34) 626.
eucalypts, (35) 842.
Eudemis naevana, (40) 356.
European pine shoot moth, (32) 655.
evaporation, atmospheric influence on, (33) 320.
evolution, (27) 175, 733; (28) 370.
evolution in Oenothera, (29) 321.
exosmosis from plant roots, (34) 827.
farm homes, (26) 597.
farm produce, distribution between landlord and tenant, (31) 390.
farming, (34) 635.
feather development, (27) 771; (28) 578.
fecundity in fowls, (28) 577.
feed unit system, (28) 74.
feeding experiments, (30) 370.
feeding experiments with lambs, (31) 667.
feeding of school children, (33) 365, 864.
feeding stuffs—
 digestibility, (26) 73.
 effect on digestive tract, (32) 367.
 energy values, (33) 72.
fermentation, (26) 613.
fermentation, alcoholic, (29) 715; (34) 318.
fermentation of manure and humus, (30) 28.
ferments, protective, of the animal organism, (30) 78.
ferrous sulphate as a top dressing for potatoes, (30) 735.
fertilizers, (31) 517, 723; (34) 426; (35) 632.
fertilizers—
 and chemical products, (37) 524.
 catalytic, (30) 821.
 chemical, (40) 421.
 effect of, (36) 446.
fiber measurements, (36) 345.
fiber plants, (30) 437.
field experiments, (38) 430.
field experiments, standardization, (39) 829; (40) 823.
fig moth, (26) 249; (40) 150.
Filaria immitis in dogs, (27) 86.
fire blight, (29) 348.
firs, balsam, (30) 843.
firs of North America, (32) 748.
fish, variation in composition, (39) 366.
fleas, (26) 350; (30) 554.
flies of New Jersey, (37) 665.
floral structure of Vitis, (26) 742.
flour, nutritive value, (35) 162.
flower—
 color, (34) 335.
 development in rice, (32) 130.
 gardening, (30) 238; (32) 839; (34) 238.
flowers, anomalous, (34) 823.
fly larvae destruction, (31) 654.
fly repellents, (32) 59.
fodder grasses of Indian forests, (29) 170.
food economy, (40) 559.
food of birds, (28) 450.

Bibliography of—Continued.

- food poisoning, (30) 167.
food-poisoning outbreaks, Gaertner-caused, (39) 488.
food requirements of men, (28) 260.
food supply of—
 Germany, (36) 263.
 Great Britain, (36) 263.
 large cities, (27) 363.
food utilization, (39) 364.
foods, (26) 355; (27) 206; (29) 360; (33) 714.
foods, dehydrated, (40) 864.
forest—
 area of New England, (39) 144.
 botany of India, (33) 855.
 charts or calendars, (33) 844.
 ecology, (35) 841.
 legislation in America, (35) 42.
 planting, (32) 542.
 regulation, (32) 47.
 soils, (33) 720.
 taxation, (39) 247.
forestry, (26) 392, 442, 542; (27) 42, 147, 648; (29) 345; (30) 238, 844; (31) 239; (33) 541.
forestry education, (36) 97.
forests—
 climatic formations, (40) 152.
 methods of thinning, (28) 744.
 of Alabama, (29) 746.
 northern New England, (37) 651.
 Philippines, (28) 343.
 Porto Rico, (36) 243.
formaldehyde in fumigants, (31) 414.
Formicidae, (29) 861.
fowl cholera, (27) 585; (31) 485.
fowl pest, (28) 238.
fowls, anatomy, (40) 483.
freezing of plants, (27) 523; (32) 42.
Frenatae, (26) 859.
frost, (34) 414.
fruit—
 bud formation, (33) 44, 838.
 culture, (26) 741; (27) 144.
 fly, Mediterranean, (28) 62; (32) 656; (34) 856.
 scale control in Italy, (29) 854.
 tree leaf-roller, (27) 161.
 trees, variability of yield, (38) 744.
fruits, seedless, (31) 35.
functional adaptation of the skeleton, (35) 376.
fungi, (34) 49.
fungi—
 and windfall timber, relations, (39) 847.
 endoneidia producing, (35) 248.
 entomogenous, of Porto Rico, (33) 459.
 imperfect, on cereals, (30) 846.
 in alimentary canal of man and higher animals, (35) 560.
 in soils, (29) 825.
 parasitic on scale insects in Formosa, (30) 456.
 parasitic on sugar cane insects, (28) 746.
fungicides, (31) 517.
fungus diseases and immunity, (32) 426.
Fusaria on sweet potatoes, (31) 544.
Fusarium, (29) 445.
Fusarium diseases of cereals, (26) 446.
galls, insect, (40) 554.
garden design, (30) 644.
garden design and gardening, (31) 239.
gardening, (26) 842; (28) 642; (34) 238, 635; (39) 444.
gardening and planting in the Tropics, (32) 45.
gas, illuminating, effect on roots, (34) 243.
gaseous exchange of animals and man, (36) 266.
genetics, (28) 370; (31) 70; (39) 672.
genetics and eugenics, (40) 275.
geochemistry, (26) 517.
germ cells as affected by narcotic poisons, (39) 178.
German-American farmers, (31) 294.
germicides for sugarhouse work, (32) 717.
germination—
 in Gramineae, (38) 25.
 of seeds, (33) 29, 826.
 tree seeds, (26) 842.
 wheat, (31) 531.
 wild oats, (31) 625.
gestation and parturition in cows, (28) 885.

Bibliography of—Continued.

- Gibberella sp. on Sophora, (40) 844.
 gipsy moth dispersion, (33) 654.
 gipsy moth wilt disease, (30) 456; (33) 255.
 gladiolus, (36) 643.
 glanders, (32) 374; (35) 780.
 glandular cells in animals, (28) 272.
 Glomerella, (28) 546.
 glycosuria and allied conditions, (30) 277.
 golden-rod gall insects, (35) 55.
 gonadectomy in rats, (34) 264.
 gonocytes and ovaries in fowls, (29) 874.
 grain diseases, (27) 848.
 grain dust explosions, (39) 494.
 grains, small, (35) 593.
 grains, susceptibility to smuts and rusts, (35) 749.
 granger movement, (30) 694.
 grape-berry moth, (26) 656; (28) 455.
 grape—
 curculio, (40) 257
 diseases, (28) 650.
 downy mildew, (30) 452.
 leaf-folder, (36) 156.
 leafhopper, (30) 548.
 leaves, analyses, (27) 731.
 phylloxera, (36) 357.
 roncet, (28) 349.
 scale, (27) 556.
 grapefruit, (39) 203.
 grapes—
 and grape culture, (33) 142.
 changes during ripening, (39) 141.
 culture, (31) 339; (34) 234.
 culture, ancient and modern, (30) 643.
 culture in Portugal, (32) 838.
 inheritance in, (33) 642.
 sterility in, (32) 627.
 grapevines as a feeding stuff, (31) 72.
 grasses, (33) 131.
 grasses of Illinois, (39) 231.
 grasses of Java, (38) 528.
 grasslands, herbage of, (37) 231.
 green manuring, (26) 425; (33) 721.
 growth phenomena, secondary, of trees and shrubs, (28) 340.
 guinea pigs, genetic studies, (34) 466.
 Gymnosporangium blasdaleum, (32) 645.
 gymnosporangium galls, (35) 46.
 gypsum production and consumption in United States, (31) 125.
 Habronema muscae, (29) 83.
 hair and hair colors, (27) 369.
 hair and hair whorls of horses, (27) 373.
 harlequin cabbage bug, (39) 657.
 hazelnuts, (33) 540.
 head smut of sorghum and corn, (31) 747.
 Heliothrips haemorrhoidalis, (26) 247.
 heliotropism as affected by salts, (34) 333.
 Helopeltis, (38) 259
 hemagglutination, (26) 481.
 hemicellulose in roots, rhizomes, and tubers, (30) 130.
 Hemiptera, American, (31) 454.
 hens, yellow color, relation to egg production, (39) 378.
 heredity, (26) 162, 365, 366; (27) 30, 70, 175; (28) 370; (29) 67; (32) 860; (33) 371, 537, 758, 870; (34) 370.
 heredity—
 and pure line theory, (32) 326
 in beans, (35) 836.
 blue-gray cattle, (36) 168.
 corn, (29) 335.
 cotton, (27) 837.
 morning-glory, (38) 750.
 peas, (38) 822.
 pigeons, (31) 573.
 plants, (30) 328; (34) 527.
 rabbits, (32) 573.
 tobacco, (30) 531.
 of doubleness in Matthiola and Petunia, (34) 237.
 of habits in beans, (34) 41.
 of leaf coloration in Melandrium, (32) 35.
 Heterodera schachtii, (27) 352.
 heteromorphic fruits and seeds, (28) 631.
 heterosporium spp., (29) 647.
 heterozygosis, (27) 428.
 hides, disinfection, (33) 178.

Bibliography of—Continued.

- home economics, (27) 299; (28) 492; (29) 92, 567, 792; (32) 197; (35) 594.
 home furnishing and decoration, (34) 293.
 Homoptera, (38) 361.
 honey, (27) 364.
 honey chemistry, (27) 613.
 hop aphid, (29) 254.
 hops, chemistry of, (31) 203.
 hops, sexual studies, (31) 832.
 horse bots, (39) 190.
 horse-radish flea-beetle, (37) 567.
 horses, (28) 469.
 horses—
 breeding, care, and management, (38) 275.
 educated, (28) 172, 470.
 form and function in, (27) 373.
 fossil, in South America, (28) 269.
 Przewalskii wild, (27) 471.
 horseshoeing, (31) 488.
 horticulture, (32) 437.
 horticulture, tropical, (30) 532.
 house fly, (33) 157, 561.
 house fly—
 dispersion, (36) 57.
 enemies of, (30) 554.
 larvae, (30) 756.
 overwintering, (39) 264.
 relation to public health, (26) 61.
 house sanitation, (28) 567.
 humus formation, (34) 515.
 humus in soils, (30) 696.
 hunger control in health and disease, (36) 363.
 hybridization and mutation, (32) 326.
 hydrocyanic acid in—
 cherry laurel, (29) 133.
 feeding stuffs, (28) 378.
 hydrotropism in roots, (34) 224.
 hygiene, (32) 760.
 Hylesia spp., (27) 59.
 Ichneumonidae of British India, (37) 765.
 illumination, dark ground, (26) 83.
 Indian cotton, (26) 736.
 industrial cooperation, (29) 595.
 infant foods, proprietary, (32) 661.
 infant mortality, (27) 365.
 infection and immunity, (35) 574.
 influenza, equine, (29) 385; (39) 392.
 insect—
 enemies of cotton boll weevil, (27) 59.
 flagellates of vertebrates, (33) 862.
 galls, uses, (39) 154.
 physiology and morphology, (27) 53.
 wings, (40) 352.
 insecticides, (31) 517.
 insecticides, physical properties, (39) 462.
 insects, (28) 155, 345; (33) 495.
 insects—
 and diseases, (26) 246.
 as carriers of chestnut blight, (34) 448.
 in relation to man, (33) 856.
 injurious, (29) 652; (39) 760.
 injurious to coconut palms, (26) 60.
 longevity, (33) 652.
 social habit, (40) 553.
 wilt disease of, (33) 857.
 insurance, compulsory, in United Kingdom, (27) 488.
 internal secretions, (26) 264.
 interstitial granules of striated muscles, (27) 466.
 intestinal flora in relation to diet, (36) 665.
 intestinal flora of swine, (38) 875.
 involution of uterus of goats, (27) 786.
 irises, (28) 743.
 iron pan formation in soils, (30) 719.
 irrigation, (31) 287; (32) 588.
 irrigation—
 farming, (30) 587.
 in California, (34) 682.
 in Italy, (37) 184.
 in United States, (37) 183.
 pumping, (37) 384.
 irritability in plants, (33) 29.
 Ixodidae, (35) 263.
 jaundice, infectious, (39) 890.
 Jöhne's bacillus, (26) 784.
 June beetle bacterial disease, (32) 62.
 katabolism, basal, (39) 271.
 kefir, (27) 75.

Bibliography of—Continued.

- kelps, California, (33) 109.
- kitchen equipment for army use, (29) 567.
- lactic-acid bacteria, (28) 75.
- lactochrome, (32) 19.
- lactose, (40) 415.
- land grants in United States, (34) 594.
- land reforms in Russia, (30) 792.
- land taxation, (32) 389.
- land-title registration, (37) 190.
- land, use in common, (33) 893.
- landscape gardening, (34) 439, 536.
- larch case bearer, (28) 857.
- larch insects, (40) 453.
- leaf miners, (34) 553.
- leaf temperature in winter, (32) 640.
- leaf tissue, parasitized, (27) 543.
- least squares, (36) 420.
- leather manufacture, (30) 615.
- leaves, senile changes in, (34) 222.
- Lecanium capreae parasites, (40) 651.
- legume diseases, (33) 548.
- leopard moth, (26) 557; (27) 658.
- Lepidoptera at light traps, (39) 560.
- lepidopterous larvae, (35) 258.
- Leptinotarsa, (40) 860.
- lettuce bacterial diseases, (33) 742.
- lettuce sclerotinose, (26) 448.
- life insurance for farmers, (27) 794.
- life zones and distribution areas in New Mexico, (29) 755.
- light, effect on etiolated leaves, (33) 826.
- light in relation to seed germination, (30) 522.
- light requirements of trees, (36) 242.
- lilies, (29) 341.
- lime culture, (29) 746.
- lime, effect on soils, (32) 32.
- lime production and consumption in United States, (31) 125.
- lime requirement of soils, (33) 623.
- lime requirement of soils, relation to bacterial activity, (39) 326.
- Limnerium validum, (27) 360.
- linseed oil, (39) 411.
- lipids in human blood, (36) 365.
- lipoids in relation to immune reactions, (35) 881.
- liver of pigs, (28) 783.
- locust borer, (37) 566.
- locusts, (36) 153.
- locusts, control in various countries, (37) 849.
- loess soils, (35) 511.
- loganberries, (39) 412.
- logarithmic curves in biological work, (32) 767.
- logging, (30) 44.
- loquats, (32) 838.
- lumbering, (26) 442.
- Lumbricidae, (40) 267.
- lungworms of sheep and deer, (30) 285.
- Lygus, (38) 461.
- lymphatic system of bovines, (27) 784.
- Lyperosia spp., (26) 559.
- magnesia as a fertilizer, (30) 234.
- magnesium carbonate in humid soils, (31) 816.
- malaria, (33) 560, 860.
- malaria parasites in Anopheles, (35) 361.
- Mallophaga, (37) 461.
- mammals of West Indies, (26) 652.
- mammary botryomycosis in mares, (31) 184.
- manganese, determination, (38) 205.
- manganese in acid soil, (39) 627.
- mangoes, (26) 841; (32) 745; (33) 342.
- manure, decomposition in soils, (38) 624.
- marine algae, (27) 22.
- market gardening, (38) 842.
- marketing, (35) 393.
- marketing horticultural products, (26) 741.
- markets, (36) 593.
- markets and food supply, (36) 762.
- Massachusetts College, (40) 595.
- May beetle in Austria-Hungary, (33) 657.
- meadow lark, western (30) 654.
- meat meal for poultry, (26) 669.
- meats, fresh and frozen, (28) 366.
- mechanical tissue in plant tendrils, (27) 631.
- Mecoptera of Japan, (30) 754.
- melon fly, (33) 562; (37) 566.
- Membracidae, (31) 59; (38) 462.
- Mendel's law, (26) 773.
- mesquite trunk diseases, (31) 751.

Bibliography of—Continued.

- metabolism in boyhood, (28) 261.
- metabolism of incubating eggs, (26) 877.
- Metarrhizium anisopliae, (39) 868.
- meteorology, (26) 613, 715; (27) 315, 414; (28) 716; (31) 20, 509, 715; (32) 210, 810; (33) 117, 320, 717.
- meteorology—
 - agricultural, (29) 811.
 - and seismology, (34) 117, 413, 614.
 - of Brazil, (37) 620.
- micoplasma theory of Eriksson, (33) 448.
- microchemistry of plants, (30) 310.
- microfilariasis of horses, (33) 583.
- Microlepidoptera, (34) 855.
- microorganisms—
 - in maple sap, (29) 157.
 - in mesenteric glands of cattle, (28) 885.
 - in milk, (31) 374.
 - pathogenic, (28) 178.
- microparasites of insects, (36) 355.
- microscopy of vegetable foods, (35) 504
- milk, (28) 372, 373, 473.
- milk—
 - and its products, (31) 176.
 - as a food, (36) 862.
 - as a food for infants, (30) 761, 861.
 - as affected by feeding stuffs, (35) 275.
 - bacteria, (34) 776.
 - bacteria, growth, (26) 880.
 - clarification, (37) 476.
 - condensed, (26) 81.
 - dried, (40) 379.
 - examination, (29) 718.
 - feeding and milk hygiene, (31) 174.
 - fermented, (34) 474.
 - from different quarters of cow's udder, (34) 270.
 - human, (35) 557.
 - human, composition, (37) 273.
 - in infant feeding, (36) 559.
 - inspection, (27) 877.
 - judging, (33) 115.
 - nutritive value, (34) 164.
 - production cost accounts, (36) 272.
 - ropy, (26) 880.
 - secretion, (30) 178; (37) 874.
 - sickness, (39) 489.
 - sterilization by ultraviolet rays, (28) 277.
- mimicry, (31) 57.
- mites, endoparasitic, (31) 356.
- mitochondria, (32) 524.
- monarchs, (38) 254.
- moor soils of northwest Germany, (29) 514.
- mosaic and allied diseases of tobacco and tomatoes, (30) 148.
- mosaic disease of plants, (31) 52.
- mosquitoes, (33) 560; (39) 867.
- Mucorineae, (27) 134.
- mucous membrane of domestic animals, (26) 480.
- mulberry blight, (34) 649.
- mulberry diseases, (33) 448.
- mulberry scale and its natural enemies, (34) 456.
- multiple gestation in uniparous animals, (28) 467.
- muscardines, (32) 63.
- mushroom Mycogone disease, (32) 50.
- mushrooms, edible and poisonous, (33) 338.
- mutation in cotton, (31) 526.
- mutation in plants, (28) 430; (32) 426; (34) 629.
- mycology, (30) 349; (33) 846.
- mycology of foods, (26) 355.
- mycorrhizae, (27) 851.
- Myriapoda of Chile, (29) 58.
- myriapods, (30) 256, 759.
- Naegleria gruberi, (38) 556.
- narcotics, effect on plants, (27) 827.
- natural history of District of Columbia, (40) 160.
- nature study, (32) 496; (33) 95.
- Navajo country, (36) 485.
- naval stores industry, (33) 544.
- Nectriella miltina on Agave, (40) 844.
- nematode parasites of mammals, (36) 753.
- nematodes—
 - embryonic development, (30) 555.
 - heteroxenous, (37) 361.
 - injurious to plants, (28) 242.
 - intestinal, (31) 679.
 - parasitic in fowls, (31) 184.
- Nematodirus filicollis, (34) 188.

Bibliography of—Continued.

- nervous diseases of horses, (31) 287.
Nezara viridula, (39) 559.
 nicotin as an insecticide, (36) 152.
 nitrate and nitrite assimilation, (32) 223.
 nitrate formation in soils, (29) 819.
 nitrates in soils, (29) 610; (37) 111.
 nitric nitrogen, determination in soil, (38) 112.
 nitric salts in plants, (30) 30.
 nitrification in—
 semiarid soils, (36) 423.
 soils, (30) 718; (33) 421.
 nitrogen—
 assimilation by plants, (26) 32.
 atmospheric fixation, (29) 417; (31) 822.
 atmospheric, utilization, (27) 623; (32) 722, 820.
 content of normal diet, (28) 261.
 fixation, (38) 325.
 fixation by bacteria, (29) 527, 630.
 in forest soils, (33) 720.
 in Pacific coast kelps, (33) 125.
 in soils and fertilizers, (37) 216.
 nutrition of mold fungi, (32) 327; (36) 527.
 transformation in soils, (26) 722.
 nodule bacteria, (37) 820.
 nodule formation in relation to nitrates, (37) 134.
 Norrland pine diseases, (28) 750.
 North American fauna, (33) 451.
 nucleic acids, (32) 201.
 nucleoproteins as antigens, (32) 179.
 nut culture, (33) 143.
 nutrition, (32) 760.
 nutritional deficiency diseases, (36) 663.
 oak mildew, (31) 845.
 oak *Oidium*, (29) 553; (34) 650.
 oak phylloxera, (32) 57.
 oaks, *valonia*, (31) 342.
 oaks, white, of eastern North America, (33) 646.
 oats—
 classification, (36) 834.
 composition, (27) 139.
 Göttinger, (28) 738.
 variation and correlation in, (32) 737, 738.
 obligate symbiosis in *Calluna vulgaris*, (33) 221.
 oils and fats, edible, (39) 411.
 Onchocerciasis in cattle, (34) 582.
 onion neck rot, (38) 451.
 oolitic deposits of Department of Yonne, (26) 519.
 Ophidia, wounds and diseases, (40) 55.
 Opilinae, (34) 454.
 orchard heating, (27) 241.
 orchard surveys, (26) 540.
 oriental sore, (32) 780.
 orientation in ants, etc., (33) 563.
 ornamental gardening, (26) 842.
 ornithology—
 British, (36) 251.
 Hungarian, (31) 57.
 of Porto Rico, (34) 850.
 osmotic pressure, (30) 310.
 otacariasis in mountain sheep, (33) 680.
 ova, mammalian, segmentation, (27) 770.
 ovaries, transplanting, (26) 163.
 oviduct of hens, (28) 576.
 ox warble flies, (29) 856; (33) 775.
 oxidases in plants, (31) 626.
 oxidases in potatoes, (31) 748.
 oxyurosis in the horse, (39) 686.
 palms, (28) 542; (30) 444.
Parasetigena segregata, (27) 58.
 parasitic diseases of sheep and cattle, (27), 182.
 parasitology of domestic animals, (26) 882.
 paratyphoid bacteria in bird diseases, (40) 685.
 parks, (26) 338.
 parthenocarp in fruits, (31) 535.
 parthenogenesis in—
 Nicotiana, (30) 224.
 Otiorhynchus spp., (32) 250.
 Paspalum poisoning in cattle, (34) 676.
 pasteurization in relation to keeping quality of butter, (39) 78.
 pasture grasses as affected by manure, (33) 228.
 pathology, (29) 174; (31) 277.
 pathology and pathologic anatomy of man and animals, (32) 271; (33) 476.
 pea aphids, (34) 62; (35) 256.
 pea thrips, (34) 451.
 peach borer, California, (26) 62; (30) 660.

Bibliography of—Continued.

- peach borer, lesser, (37) 159.
 peaches, (38) 43.
 peanut diseases, (32) 546.
 pear slug, (27) 459.
 pecan insects, (40) 259.
Pediculoides ventricosus, (27) 565.
 pedogenesis, (26) 147.
 pellagra, (28) 854; (34) 260; (36) 764.
 penal farms and farm colonies, (32) 490.
 pentosans, determination, (40) 114.
 periodicity in—
 plants, (27) 522; (28) 435; (35) 632.
 tropical trees, (31) 743.
 woody plants, (29) 443.
 permeability of plant tissue, (34) 732.
 pharmaceutical chemistry, (32) 678.
Phora spp., (30) 757.
 phosphate—
 deposits in Florida, (30) 222; (34) 425.
 rock, (32) 126; (35) 23.
 rock, composting with sulphur, (39) 823.
 phosphates, (27) 22.
 phosphoric acid in feeds, (31) 563.
 phosphorus—
 compounds in animal metabolism, (32) 601, 858.
 content of growing pigs, (32) 73.
 effect on legumes, (37) 829.
 photomorphous shoots in *Pinus*, (30) 744.
*Phylloxera*inae, (27) 860.
Physalospora cydoniae, (36) 251.
 physiology, (28) 466; (31) 764; (32) 565, 860; (34) 658, 777; (40) 869.
 physiology and metabolism of growth, (26) 659.
 phytopathology, (39) 352.
Phytophthora, (31) 242.
 pigeon culture, (27) 174.
 pigmentation, dark, in domestic animals, (26) 472.
 pigments, plant and animal, (32) 18.
 pigs, (31) 694.
 pigs, bacillary pest, typhus, or paratyphus of, (33) 680.
Pimpla pomorum, (40) 65.
 pine—
 leaf cast, (32) 845.
 reproduction in north polar region, (29) 442.
 sawfly, imported, (39) 760.
 pines, mountain, in eastern central Alps, (32) 237.
 pink bollworm, (37) 564.
 pink corn worm, (35) 257.
 piroplasmosis, bovine, (27) 384.
 piroplasmosis, equine, (26) 384; (31) 382.
 piroplasms, culture of, (30) 481.
 plague transmission by flea bites, (26) 61.
 plant—
 alkaloids, (31) 409.
 breeding, (28) 145; (31) 131; (32) 822.
 chlorosis, (34) 53.
 diseases, (26) 445; (27) 45, 445, 543, 747; (28) 155, 345; (30) 147, 348; (31) 746; (34) 348; (40) 47.
 plant diseases—
 biological treatment of, (31) 50.
 heredity of, (31) 841.
 in Argentina, (35) 243.
 Ceylon, (33) 545.
 Indiana, (39) 547.
 Saxony, (32) 749.
 plant—
 food production in soils, (30) 624.
 galls, (30) 852.
 plant growth as affected by—
 forest humus, (32) 619.
 nutrient and nonnutrient bases, (30) 128.
 plant—
 hybridization, (27) 239; (29) 320.
 lice, (32) 553.
 metabolism as affected by acid and alkaline solutions, (32) 626.
 metabolism as affected by etherization, (26) 128.
 morphology, (35) 27.
 nutrition and manuring, (36) 114.
 physiology, (31) 323; (36) 429; (38) 525.
 poisons and stimulants, inorganic, (33) 328.
 stimulation, (27) 331.
 stimulation by poisonous substances, (27) 131.

Bibliography of—Continued.

- plant—continued.
 - succession, (32) 128; (37) 434.
 - tissue, killing by low temperature, (35) 234.
- plants as affected by—
 - coal tar vapors, (27) 636.
 - distilled water, (31) 730.
 - freezing, (31) 34.
 - light and shade, (30) 430.
 - salts, (31) 426.
 - smoke and dust, (31) 34.
- plants—
 - immunity to their own poisons, (32) 35.
 - nutrition and reproduction in, (28) 224.
 - poisonous, (26) 327.
 - poisonous, of California, (32) 778.
 - poisonous to livestock, (37) 688.
 - useful in dye making, (29) 626.
 - woody, (26) 240.
 - woody, of German East Africa, (29) 643.
 - woody, of Switzerland, (35) 843.
- Plasmidiophoraceae, (31) 145.
- Pleurotus spp., (28) 852.
- plum borer, (33) 454.
- plum brown rot, (34) 445.
- plum curculio, (27) 864.
- plums, (27) 40.
- Plusia gamma, (32) 837.
- pneumonia, (26) 147.
- pneumonia in lower animals, (30) 580.
- poliomyelitis, (39) 187.
- pollen of red clover, (29) 829.
- pollination, (29) 437.
- pollination—
 - in Compositae, (34) 727.
 - in field crops, (36) 527.
 - of pomaceous fruits, (29) 541.
 - of red clover, (33) 833.
- polyhedra in insects, (37) 254.
- Polyporus dryadeus, (30) 354.
- potamology, (33) 537.
- potash, (31) 321; (32) 126.
- potash—
 - deposits in United States, (31) 125.
 - from alunite, (39) 728.
 - from blast furnaces, (36) 625.
 - from blast furnaces and cement works, (40) 128.
 - from complex mineral silicates, (39) 218.
 - industry, (26) 316.
 - production in 1917, (40) 725.
 - resources of United States, (36) 26.
 - salts, (33) 625; (35) 23.
- potassium, determination, (39) 714.
- potato—
 - bacterial rots, (26) 847.
 - diseases, (26) 547; (30) 649; (31) 51.
 - dry rot, (29) 48.
 - fllea beetle, (29) 259.
 - insects, (33) 352.
 - late blight, (27) 545; (34) 246; (39) 651.
 - leaf-roll, (27) 443; (28) 52, 848; (30) 243; (32) 643.
- powdery scab, (31) 149.
- Rhizoctonia disease, (32) 147.
- scab, (32) 147, 547.
- silver scurf, (29) 347.
- tuber moth, (36) 656.
- tuber rots, (34) 246.
- wart disease, (26) 448.
- poultry, (26) 669; (28) 599; (33) 575.
- poultry investigations, (27) 675.
- poultry raising, (38) 776.
- powdery mildews, (30) 537.
- prairie dogs, (34) 38.
- pregnancy in domestic animals, (35) 880.
- premature fall of flower petals, (27) 230.
- protein hydrolysis products, (28) 168.
- protein metabolism, (26) 764; (28) 167.
- proteins, (26) 801; (38) 708.
- proteins, digestion by serums, (35) 179.
- protecephalidae, (32) 854.
- protist organisms, infective granule in, (30) 577.
- protozoa—
 - in ruminants' stomachs, (30) 578.
 - intestinal, (40) 187.
 - pathogenic, (26) 246, 865; (27) 460, 551.
- pruning, (36) 536.
- Psyllidae of New World, (31) 453.
- Puccinia dispersa, (29) 346.

Bibliography of—Continued.

- Puccinia graminis, (33) 345.
- puerperal diseases in cattle, (34) 386.
- pulp and paper industry, (29) 119.
- pumping machinery, (31) 89.
- pure cultures of amebae, (26) 375.
- purple scale, (26) 757.
- putrefaction of meat, etc., (34) 164.
- quassia, insecticidal value, (38) 56.
- quebracho, (36) 745.
- Quercus alba, ray system, (40) 153.
- race hygiene, (27) 70.
- radioactivity of soils and waters, (33) 809.
- radishes, (34) 532.
- radinose, physiological behavior, (37) 572.
- railroad ties, preservation, (28) 240.
- railroads, agricultural development work, (40) 488.
- rainfall, (38) 209.
- rainfall, tropical, (37) 17.
- rats, (40) 546.
- ray tracheids, in conifers, (28) 440.
- reclamation of sand dunes, (26) 223.
- red banded thrips, (28) 354.
- red peppers, (29) 264.
- red scale, (26) 554.
- red spider, (29) 262; (32) 158; (36) 557.
- Reduviidae of North America, (30) 55.
- reproduction in relation to vegetative vigor in plants, (34) 824.
- respiration of fruits and plant tissues in gases, (29) 539.
- rest period in—
 - plants, (32) 437; (35) 222.
 - potatoes, (32) 130.
 - seeds, (35) 521.
- Rhamnus purshiana, (32) 46.
- Rhizoctonia, (34) 841; (35) 749.
- Ribes pallidum, fertility, (31) 225.
- rice sclerotial disease, (30) 244.
- rice smut, (35) 247.
- rinderpest, (30) 683; (35) 487; (36) 779.
- ripening processes of fruits, (26) 139.
- roads, (26) 486.
- roads—
 - bridges, and culverts, (35) 583.
 - construction and maintenance, (37) 695.
 - in United Kingdom, (31) 289.
 - in United States, (37) 188.
- roaring in horses, (26) 185.
- Rocky Mountain spotted fever, (27) 480, 866.
- root—
 - knot, (26) 343.
 - nodules in Podocarpaceae, (27) 828.
 - systems of agricultural plants, (36) 827.
 - tubercles, (36) 848.
 - tumors, (31) 841.
- roots of herbaceous plants, (36) 223.
- rope and its use on the farm, (30) 591.
- rose aphids, (32) 848.
- rose leafhopper, (39) 62.
- rose scale, (33) 557.
- roses, (27) 145.
- rotation of crops, (34) 337.
- roundworms, parasitic in pigs, (28) 283.
- roup in fowls, (38) 890.
- rubber, (27) 647; (39) 51.
- rubber—
 - chemistry, (30) 313.
 - industry of the East, (33) 543.
 - Manihot, (30) 146.
 - root disease, (27) 854.
- rum, (26) 613.
- rumpled fowls, (26) 573.
- rural—
 - church, community service, (40) 390.
 - communities, (32) 389.
 - economics, (26) 92; (28) 492, 795; (31) 894; (32) 194; (35) 588.
 - life, (30) 197, 496, 695.
 - life and education, (31) 193; (33) 95.
 - migration in France, (35) 497.
 - problems, (40) 202, 387.
 - social science, (26) 297.
 - social surveys, (36) 288.
 - sociology, (32) 194, 488.
- ruts, (30) 350.
- ruts, propagation, (27) 745.
- rutting of cows, (26) 367.
- saccharin, (26) 257.

Bibliography of—Continued.

- saccharose formation in sugar beets, (27) 526.
- salts, absorption by plants, (35) 433.
- salts, antagonism, (33) 323, 522.
- sanitation, (40) 594.
- sap ascent in plants, (35) 26.
- sap studies, (32) 139.
- Sarcocystis tenella, (34) 384.
- sarcosporidin, (30) 577.
- saw palmetto, (35) 807.
- school—
 - feeding movement, (27) 270; (29) 162, 267.
 - gardening, (29) 296; (31) 395.
 - lunches, (31) 660; (38) 167.
- schools as social centers, (31) 297.
- schools, rural, (32) 389, 392.
- Sclerostomidae of horses, (36) 280.
- Sclerotium rhizodes, (27) 150.
- Scolytoidea, (32) 658.
- seed—
 - coat of Xanthium, (30) 132.
 - improvement in Canada, (28) 739.
 - inspection, (32) 232.
 - production, (39) 842.
 - selection, (26) 141.
- seedlings, damping-off, (30) 846.
- seeds, (38) 343.
- seeds—
 - afterripening, (29) 527.
 - as affected by disinfectants, (31) 824.
 - biological method of identification, (32) 42.
 - delayed germination in, (31) 824; (34) 31.
 - disinfection, (26) 820; (35) 444.
 - germination, (27) 431; (28) 327; (35) 632.
 - germination as affected by light, (29) 525.
 - leguminous, as affected by heat, (33) 629.
- seismology, (32) 810; (33) 320, 717.
- sempervivum rust, (28) 845.
- septicemia, hemorrhagic, (38) 887.
- serology, (32) 578.
- serpentine leaf miner, (29) 857.
- serum physiology, (39) 190.
- serum sickness, (39) 284.
- sewage—
 - disposal, (31) 592.
 - disposal and treatment, (26) 215.
 - purification, (37) 488; (38) 691.
- sex cells, (26) 364.
- sex characters, secondary male, in female birds, (38) 171.
- sex determination, (26) 364; (27) 573.
- sex differences, (27) 369.
- sex linkage in fowls, (27) 275.
- sex ratios in pigeons, (33) 370.
- sex trimorphism, (28) 571.
- sexuality in Uredineae, (34) 526.
- shade, effect on forest seedlings, (31) 838.
- sheep food plants and range conditions, (30) 568.
- sheep in America, (31) 567.
- sheep maggot fly, (29) 656.
- shoots, effect of decapitation or inversion on, (33) 827.
- Signiphorinae, (30) 759.
- silage fermentation, (27) 205; (36) 802.
- silage, methods of treatment, (40) 116.
- silica in plant nutrition, (26) 531.
- silicates, decomposition by soil bacteria and yeasts, (31) 121.
- silkworm, (26) 556; (30) 456.
- silkworm—
 - larval characters, (37) 158.
 - muscardine, (26) 757.
 - pebrine, (37) 361.
 - zygotic constitution, (31) 60.
- silos and silage, (34) 665.
- silver leaf disease, (29) 847; (34) 648.
- Simuliidae, (31) 254; (33) 156.
- Siska pigs, (26) 368.
- skim milk and whey for calves, (36) 877.
- smoke, effect on plant life, (29) 630.
- smoke toxicity, (29) 529.
- social center work and rural life, (31) 593.
- sociology, (28) 492.
- sodium benzoate, (27) 366.
- sodium salts, (35) 24.
- soil—
 - acidity, (36) 505; (38) 512, 720; (39)⁵514.
 - aldehydes, (40) 22.
 - analysis, (28) 123, 425; (33) 205.

Bibliography of—Continued.

- soil—continued.
 - and climate of small areas, (26) 517.
 - bacteria as affected by baryard manure, (26) 31.
 - bacteriology, (28) 34; (30) 820.
 - carbonates, (30) 809.
 - chemistry, (32) 718.
 - constituents, (28) 324.
 - forming minerals, (28) 812.
 - fungi, (36) 215.
 - fungi of Norway, (34) 226.
 - inoculation, (27) 322.
 - mapping, (32) 26.
 - mapping in Germany, (28) 620.
 - moisture, (32) 815.
 - moisture, effect on maize, (39) 20.
 - nitrogen, (29) 316.
 - organisms, (32) 321; (39) 516.
 - protozoa, (31) 420; (34) 21.
 - solution, (33) 322.
 - temperature, (29) 620.
- soils, (27) 417, 821; (31) 723.
- soils—
 - and manures, (34) 717.
 - as affected by drying, (33) 811.
 - hygroscopic coefficient, (38) 211.
 - loss of calcium, (39) 518.
 - of San Luis Province, Argentina, (34) 512.
 - of United States, (28) 117.
 - sterilization, (31) 27; (35) 515; (37) 213.
 - sugar inverting activity, (40) 124.
- sorghum loose kernel smut, (34) 444.
- sorghums as affected by climate and weather, (39) 236.
- Spalangia muscidarum, (30) 857.
- specialization of parasitic fungi, (37) 149.
- spermatogenesis in hybrids, (27) 371.
- spermatozoa, duration after fecundation, (34) 864.
- Sphaerella moricola, (27) 547.
- spiders, (28) 257.
- spirits, (31) 339.
- spirochetes, (26) 460; (27) 780; (39) 190.
- spirochetosis, equine, (28) 184.
- spirochetosis in fowls, (27) 385; (31) 383.
- Spirogyra as affected by colloidal metals, (31) 129.
- Spongopora subterranea, (33) 347.
- spore germination—
 - and infection in Oomycetes, (26) 343.
 - of cereal smuts, (31) 642.
- sporotrichosis, (31) 81; (34) 385.
- spotted fever tick, (26) 255.
- spraying, (28) 787.
- spur shoot of pines, (31) 523.
- standard of living in America, (26) 157.
- starch and plastid formation in plants, (28) 525.
- sterility in—
 - fruits, (36) 344.
 - grapes, (31) 442.
 - mules, (34) 569.
- stimuli, effect on plants and animals, (32)²222.
- stomach of ruminants, (27) 68.
- stomach, third, of ruminants, (28) 271.
- strawberries, (31) 339; (32) 639; (37) 143.
- strawberries, sterility, (39) 48.
- strawberry—
 - culture, (34) 42.
 - rots, (39) 543.
 - weevil, (38) 163.
- stream-flow measurement, (38) 187.
- Strepsiptera, (40) 266.
- streptococci, (40) 184, 881.
- streptococci in milk, (26) 777.
- sugar, (27) 615; (29) 719; (31) 334.
- sugar beet—
 - leafhoppers, natural enemies, (33) 747.
 - nematode, (35) 151.
 - seedling diseases, (33) 246.
 - thrips, (36) 153.
- sugar beets, (27) 642.
- sugar beets—
 - analysis, (26) 410.
 - variation and correlation, (37) 642.
- sugar cane—
 - borer, (30) 834.
 - diseases, (38) 851; (40) 157.
 - gummosis, (33) 852.
 - hybridization, (26) 439.

Bibliography of—Continued.

- sugar cane—continued.
 insects, (30) 355.
 moth stalk borer, (33) 454.
 rind disease, (36) 649.
 seed selection and treatment, (30) 449.
- sugar—
 deterioration, (39) 510.
 in plant tissues, (34) 729.
 utilization by plants, (36) 125.
- sulphocyanid in ammonium sulphate, (31) 422.
- sulphur—
 as a fertilizer, (32) 725.
 compounds in plant nutrition, (34) 221.
 dioxide, effect on plants and animals, (35) 133.
 for plants, (30) 139.
 in plants, (31) 818.
 oxidation in soils, (36) 821.
- suprarenal capsules of domestic animals, (28) 778.
- surra, (29) 176.
 swamp fever in horses, (26) 287.
- sweet clover, (28) 637.
 sweet clover as green manure, (38) 722.
 sweet pea diseases, (32) 446.
 sweet potatoes, changes in during storage, (32) 634.
- symbiosis, (28) 35.
- Synchytrium spp., (28) 844.
- Syrphidae, (30) 552.
- Syrphidae of Maine, (36) 460.
- Tachardia lacea, (35) 659.
- Taphrina communis and *T. pruni*, (40) 452.
- tarbagans in relation to plague, (26) 653.
- tarnished plant bug, (31) 651.
- tea, (36) 241.
- tea fermentation, (37) 44.
- teak, annual ring formation in, (34) 839.
- temperature, relation to plant growth, (35) 432; (39) 616.
- Tennessee geology, soils, drainage, and forestry, (26) 812.
- termites, (27) 555; (32) 755.
- termites, Australian, (30) 657.
- terrapiu scale, (35) 158.
- tetraplasy, (29) 67.
- Tetrastichus asparagi, (33) 658.
- Texas fever, (35) 77.
- Texas fever tick, (33) 751.
- therapeutics, (32) 678.
- thermoprecipitin reaction, (31) 878.
- thunderstorms, (32) 24.
- thyroid feeding, (39) 70.
- Thysanoptera, (31) 351.
- Thysanoptera of Florida, (40) 353.
- ticks, (27) 866.
- timber, (28) 439.
- timber decay, (35) 252.
- timber preservation, (35) 241.
- timbers resistant to termites, (30) 536.
- timbers, tropical, (39) 245.
- timothy, (33) 235.
- timothy leaf smut, (36) 543.
- Tipula spp. of North America, (31) 551.
- tissue changes in fasting animals, (33) 464.
- tobacco, (36) 836.
- tobacco—
 black rust, (31) 150.
 breeding, (29) 537.
 mosaic disease, (33) 447.
 wireworm, (31) 253.
- tolerance of forest trees, (31) 640.
- tomato blossom-end rot, (32) 344.
- tomato products, (30) 666.
- tomatoes, (33) 837.
- toxicity of inorganic salts, (31) 730.
- toxicity of salts as affected by other salts, (30) 31.
- traction plowing, (26) 89.
- Trametes pini, (34) 547.
- transpiration—
 and water vapor retention in plants, (29) 524.
 in plants, (34) 335; (35) 23.
 in wheat seedlings, (28) 629.
- transportation of perishable products, (40) 489.
- tree crickets, (33) 653.
- tree culture, (29) 148; (33) 537; (34) 435.
- tree diseases, (27) 753.
- trees, (26) 442.

Bibliography of—Continued.

- trees—
 and shrubs of the British Isles, (32) 337.
 germination and early growth, (36) 447.
 influence of source of seed, (38) 45.
 of Indiana, (40) 152.
- trematodes of North America, (33) 863; (38) 365.
- trichiniasis, (34) 478.
- tricolor inheritance in guinea pigs, (35) 771.
- tropical botany and agriculture, (26) 629.
- Tropics, magazine articles on, (40) 687.
- Trypanosoma americanum, (27) 82.
- trypanosome—
 disease of camels, (26) 85.
 new, in Uruguay, (26) 584.
- trypanosomes, (28) 282.
- trypanosomes in—
 cattle, (28) 84.
 German cattle, (30) 782.
 healthy cattle, (28) 584.
 rats, (33) 160.
- tsutsugamushi disease, (37) 859.
- tubercle bacilli, (27) 682; (29) 78.
- tubercle bacilli—
 in circulating blood, (31) 83
 isolation, (37) 180.
- tuberculin—
 in diagnosis and treatment, (30) 382.
 test, (35) 576.
- tuberculosis, (27) 579; (28) 180, 284, 883; (30) 884; (34) 679; (37) 879, 880.
- tuberculosis—
 avian, (31) 582; (36) 480.
 immunization, (26) 86.
 in fowls, (26) 487; (34) 880.
 in relation to milk, (26) 275; (30) 574.
- tulips, (31) 48; (37) 536.
- tyloses in American woods, (30) 844.
- ultramicroscopy, (26) 83.
- underground waters in Ohio, (28) 617.
- United States Government publications on agriculture, (29) 598.
- Uromyces pisi, (26) 651; (31) 347.
- uterine diseases in cattle, (36) 279.
- vaccine, sensitized and nonsensitized, (35) 782.
- vaginal catarrh in cattle, (31) 286.
- vanilla extract, (35) 765.
- variability and amphimixis, (34) 370.
- variation, (27) 175.
- variation in pears, (32) 638.
- variation in plants, (37) 28, 642.
- vegetable growing, (29) 436.
- vegetables, (32) 834.
- vegetation in marshes, (32) 330.
- vegetation of sand hills, (31) 425.
- verbena bud moth, (33) 255.
- verminous toxins, (30) 279.
- verruca, (32) 350.
- veterinary medicine, (28) 583, 667.
- violet diseases, (29) 753.
- violets, (29) 543.
- vitamins, (36) 363.
- vocational education, (40) 196.
- walnut aphids, (31) 754.
- walnut-oak hybrids, (32) 46.
- walnut weevil, (28) 553.
- walnuts, Persian, (28) 543.
- war gardens, (39) 444.
- warble fly, (31) 254.
- warty typhilitis in pheasants, (26) 684.
- water—
 conduits, (30) 887.
 culture experiments, (34) 826.
 flow in pipes, channels, etc., (36) 783.
 for agricultural and technical purposes, (28) 416.
 ground, (32) 123; (40) 785.
 hard, (30) 714.
 hemlock, (30) 881.
 purification, (37) 488.
 requirements of plants, (29) 826; (34) 522 (38) 228.
 resources, (27) 116; (33) 89, 882.
 resources of Wichita region, Kansas, (31) 89.
 rights and control, (32) 588.
 sterilization, (30) 816.
 sterilization by ultraviolet rays, (26) 28; (28) 214.
 supply in Italy, (34) 786.
- weather forecasting, (30) 510; (32) 316; (35) 808.

Bibliography of—Continued.

- weathering of silicates, (29) 124.
weed growth, (40) 832.
weevils of northeastern America, (36) 157.
weights of newborn animals, (32) 862.
wheat—
as affected by weight of seed, (39) 743.
culture in America, (26) 134.
durum, (38) 839.
milling and baking qualities, (37) 862.
morphology, (39) 342.
Russian, (40) 535.
rust, (26) 846.
stored, respiration, (39) 37.
varieties of Alsace-Lorraine and vicinity, (26) 838.
white grubs, (38) 162.
white pines, (32) 840.
wilting in plants, (29) 523; (34) 825.
wind as a pathological factor in regard to plants, (30) 354.
wine, (31) 339.
wine making in France, (34) 690
wireworm, common, (37) 765.
wireworm, false, (39) 363.
wood—
accretion as affected by light and heat, (32) 144.
block paving, (33) 890.
boring crustaceans, (36) 46.
disinfection, (34) 781.
fuel, (40) 641.
pith-ray flecks in, (29) 44.
preservation, (36) 844.
preservatives, toxicity, (33) 651.
pulp, (26) 142.
pulp manufacture, soda process, (31) 715.
structure, (28) 744; (29) 344.
woods—
American, (27) 42.
intercellular canals, (39) 145.
of United States, (27) 541.
strength tests, (33) 845.
woody plants, (39) 245.
woody plants, forcing, (30) 642.
worm nodules in cattle, (32) 377.
worms in blood vessels of horses, (29) 784.
writings of—
Coquillett, D. W., (26) 855.
Hilgard, E. W., (35) 595.
King, A. F. A., (33) 560.
McMurtrie, W., (31) 196.
Slingerland, M. V., (32) 56.
Smith, J. B., (29) 353.
Storer, F. H., (33) 801.
Uhler, P. R., (31) 349.
xenia, (38) 526.
xeromorphy in marsh plants, (27) 829.
yeasts, effects of salts on, (38) 503.
yellow clover aphid, (32) 248.
yoghourt, (29) 59.
yolk nucleus, (28) 766.
zeolitic properties of ground phonolite and lime trass, (29) 519.
zoocoids of North Africa, (28) 357.
zoology, (26) 753; (28) 247, 248; (31) 56; (33) 450; (36) 151.
zoology, Canadian, (26) 59; (27) 551; (30) 52; (31) 648; (34) 651; (38) 256.
Zygadenus, (33) 177.
Bibos frontalis, hybridization experiments, (28) 670.
Bicalcium phosphate, manufacture and fertilizing value, (29) 128.
Bicarbonate and carbonate mixtures, titration, (39) 714.
Bicarbonates—
determination, (40) 112.
determination in chlorinated solutions, (39) 506.
determination in hypochlorite solutions, (40) 309.
effect on saccharification of starch, (26) 309.
Bichloride of mercury, *see* Corrosive sublimate.
Bicho de Cesto, notes, (27) 559.
Bichromate of potash, effect on milk, (27) 500.
Bicycle ergometer—
description, (31) 764.
with electric brake, (27) 768.
Big bud mite, remedies, (40) 266.
Big Lake Reservation as a game refuge, (38) 555.
Bighead—
in sheep, investigations, (31) 883.
or osteoporelisis in horses, (36) 780.
Bignonia capreolata, notes, (27) 346.
Bija sal, notes, (29) 443.
Bilberries, seeds and seed oil of, (30) 803.
Bile—
bovine, analyses, (29) 377.
food accessories in, (40) 271.
of tubercular animals, tubercle bacilli in, (31) 481.
of tubercular animals, virulence, (29) 582.
secretion, (34) 463.
Bilharzia, transmission by flies, (38) 563.
Biliary fever, equine—
notes and treatment, (32) 278.
relation to piroplasmosis, (26) 887.
Bilimbi, asexual propagation, (32) 143.
Billbergia nutans, glycogen content, (27) 133.
Billbugs—
control, (40) 655.
in Minnesota, (38) 155.
injurious to sugar cane, (35) 657.
life history and remedies, (38) 54.
notes, (33) 58, 746.
Binder twine, fibers used for, (27) 534.
Binders—
care and repair, (39) 292.
grain, motor drawn and operated, (31) 188.
Bindweed—
eradication, (38) 632.
gall maker, notes, (32) 347.
prominent in Louisiana, (37) 564.
Binocular magnifier, (36) 97.
Bins, reinforced concrete, construction, (36) 687.
Bins, treatise, (35) 786.
Biocharacters, definition, (38) 823.
Biochemical—
methods, handbook, (27) 107; (33) 310.
reactions, occurring in light, (28) 201.
Biochemische Zeitschrift, index, (29) 120.
Biochemistry—
laboratory guide, (35) 8.
monograph, (28) 607; (32) 201.
of man and animals, handbook, (26) 306.
studies, (31) 201, 277.
treatise, (26) 106; (27) 821; (28) 201; (29) 201, 408; (30) 201, 310, 707, 801; (34) 607; (39) 607.
Bioclimatic law in research and practice, (39) 817.
Biocolloids—*see also* Colloids.
investigations, (37) 325, 821.
swelling, relation to temperature, (39) 731.
Bioenergy, muscular, of living organisms, (28) 168.
Biographical—
sketch of—
Abbe, C., (35) 699.
Bessey, C. E., (32) 599.
Brendel, F., (28) 716.
Coover, A. B., (39) 799.
Goessmann, C. A., (38) 810.
Goodell, H. H., (26) 897.
Hilgard, E. W., (34) 301.
Hooker, C. W., (28) 300.
Kastle, J. H., (35) 596.
Leaming, J. S., (26) 437.
Liebig, J. von, (32) 109.
Loughridge, R. H., (37) 453.
Morse, E. W., (32) 800.
Popence, E. A., (29) 699.
Salmon, D. E., (31) 697.
Saunders, W., (31) 698.
Scovell, M. A., (27) 401; (34) 69.
Smith, J. B., (26) 403.
Storer, F. H., (31) 698.
Stubbs, J. E., (31) 100.
Wahnschaffe, F., (31) 200.
Weber, H. A., (27) 398.
sketches, (40) 199, 200, 600, 800.
sketches and necrology, (39) 200, 400, 900.
Biological—
diagnostics, inconsistencies of, (29) 500.
investigations, logarithmic curves in, (32) 766.
products—
manufacture in United States, (32) 875.
production and distribution in Holland, (29) 377.
propagation and sale, (28) 677.
use in veterinary medicine, (27) 577.
reactions, discussion, (26) 579; (27) 576.
survey of Washington, (40) 753.

Biological—Continued.

- therapeutics, review, (35) 73.
- therapy, evolution, (27) 377.
- Biology—
 - and radioactivity, notes, (30) 224.
 - bibliography, (26) 470; (28) 393, 765; (33) 167, 279.
 - biometric ideas and methods in, (27) 69.
 - color standards in, (29) 762.
 - courses in, (28) 91.
 - dictionary, (27) 754.
 - experimental, papers on, (29) 676.
 - experimental, studies, (31) 277.
 - fresh-water, treatise, (39) 554.
 - general and medical, treatise, (37) 76.
 - general, bibliography, (36) 366, 468.
 - index catalogue, (32) 166.
 - laboratory manual, (26) 393.
 - stable taxonomy in, (35) 328.
 - tables of statistical error, (26) 773.
 - treatise, (26) 364, 392; (28) 271, 369, 393, 765, 876; (30) 564; (34) 263.
 - use of "normal" curve of frequency in, (29) 168.
- Biometrical computations, notes, (26) 365.
- Biometricians, tables for, (32) 362.
- Biometrics—
 - method of calculating frequencies, (27) 275.
 - statistical theory in, (32) 665.
- Biomyia leodivora n.sp., description, (40) 653.
- Biorisator, Lobeck, description, (31) 276.
- Biosteres—
 - n.sp., descriptions, (26) 152.
 - rhagoletis n.sp., description, (34) 456.
 - rhagoletis, notes, (36) 259.
 - sp., parasite on bud moth, (34) 250.
 - spp., notes, (30) 460.
- Biota ornamental, wood structure, (27) 147.
- Biotite—
 - as source of potash, (26) 426; (27) 323, 520; (30) 216, 221; (31) 621; (33) 722; (36) 728; (37) 321.
 - fertilizing value, (27) 725; (29) 625; (39) 728.
 - potash, solubility, (34) 328.
- Biotypes and phylogeny, discussion, (26) 878.
- Bipalium kewense in Kentucky, (34) 458.
- Biphosphate, notes, (27) 824.
- Biporus bibax, relation to lemon gummosis, (32) 53.
- Birch—
 - analyses and nutritive value, (35) 164.
 - and oak, union of, (33) 343.
 - black knot, notes, (32) 646.
 - borer, bronze, notes, (27) 755; (28) 156, 158, 351, 653; (30) 153, 657; (38) 459, 762; (40) 552.
 - cambium miner, investigations, (30) 855.
 - canker, notes, (28) 446.
 - case-bearer, notes, (40) 551.
 - destructive distillation, (27) 745; (38) 808.
 - distillation value, (32) 48.
 - gray, relation to white pine regeneration, (40) 842.
 - leaf roller, notes, (29) 251.
 - leaf skeletonizer, see Bucculatrix canadensisella.
 - leafhopper, yellow, notes, (40) 57.
 - leaf-mining sawfly, notes, (29) 252.
 - leaves extract, composition, (27) 309.
 - rust, overwintering, (39) 553.
 - starch reserve in, (33) 523.
 - twig canker, notes, (30) 543.
 - wood, analyses and use as human food, (33) 866.
 - wood ashes, fertilizing value, (26) 427.
 - wood dust as a feeding stuff, (36) 563.
 - woods of United States, (30) 46.
 - yellow, volume tables for, (30) 744.
- Bird—
 - day—
 - in Alabama, (27) 394.
 - in Kentucky, (27) 195.
 - manual, (27) 898; (31) 395, 495; (33) 495.
 - notes, (30) 196.
 - suggestions for, (31) 792.
 - diseases, notes, (28) 279.
 - enemies of tree-hoppers, (39) 860.
 - enemies of white grubs, (40) 547.
 - families, observations on, (27) 95.
 - feathers, utilization in France, (26) 876.
 - guano, fertilizing value, (29) 129.
 - houses and nesting boxes, construction, (34) 650.
 - houses, construction, (31) 751.
 - law, Lacey, notes, (26) 854.

Bird—Continued.

- lice, studies, (33) 353.
- mites, dissemination by English sparrows, (26) 246.
- protection, importance, (32) 847.
- rape, dissemination by farm animals, (26) 839.
- reservation, Hawaiian, notes, (27) 549.
- reservations on irrigation projects, (37) 355.
- stomachs, estimating contents, (27) 754.
- studies for home and school, manual, (26) 393.
- Birds—
 - acanthocephalan parasites, (39) 556.
 - anesthesia and narcosis of, (35) 379.
 - anthrax infection in, (28) 678.
 - artificial insemination in, (31) 370.
 - as carriers of chestnut blight fungus, (32) 55.
 - as seed carriers, (27) 549.
 - attracting, (27) 355; (32) 347; (34) 238, 650, 848; (36) 151; (38) 53, 556.
 - attracting to reservations, (39) 760.
 - attraction and protection, (38) 457.
 - Australian, feeding habits, (29) 756; (30) 454.
 - Australian, trematodes of, (39) 556.
 - bibliography, (32) 447, 898.
 - biology, textbook, (38) 94.
 - blood parasites of, (33) 152.
 - breeding and rearing in captivity, (33) 152.
 - British, bibliography, (39) 555.
 - British, feeding habits, treatise, (30) 249.
 - cage, care and feeding, (28) 173.
 - cage, textbook, (30) 696.
 - cecal and liver infections in, (36) 483, 781.
 - census at Washington, D. C., (39) 154.
 - common—
 - nest and eggs of, (31) 793.
 - of the farm, (28) 853; (32) 648.
 - of town and country, (31) 547.
 - destruction of grain aphids by, (29) 452.
 - destructive—
 - control, (40) 254.
 - to alfalfa caterpillar, (32) 58.
 - alfalfa weevil, (27) 562; (31) 655.
 - bagworms, (27) 558.
 - Chinese cotton scale, (26) 556.
 - codling moth, (27) 559.
 - cutworms, (27) 656.
 - fruit tree leaf roller, (28) 755.
 - gipsy moth eggs, (27) 355.
 - grasshoppers, (31) 57.
 - leopard moth, (26) 557.
 - dipterous parasites of, (36) 359.
 - dissemination of—
 - gipsy moth by, (28) 656.
 - weed seeds by, (30) 248; (31) 547.
 - domestic, treatise, (30) 872.
 - domestication, (27) 771.
 - dying pound Great Salt Lake, (33) 251.
 - eating poison ivy fruits, (38) 203.
 - economic, of Labrador, (39) 759.
 - economic value, (33) 152, 553.
 - ectoparasites of, (28) 888.
 - effect on reforestation, (29) 545.
 - egg-laying cycles, (37) 869.
 - eggs as affected by low temperature, (26) 452.
 - European game, in Indiana, (30) 354.
 - feeding habits, (27) 550, 855; (31) 547; (34) 650.
 - female, secondary male sex characters in, (38) 171.
 - fertilization of Antholyza bicolor by, (28) 531.
 - food of, bibliography, (28) 450.
 - game—
 - aquatic and rapacious, relation to man, (27) 355.
 - introduction into California, (31) 846.
 - of America, (39) 759.
 - of California, (40) 646.
 - of West Virginia, (38) 356.
 - generic names, lists, (39) 553.
 - geographical variation in, (27) 655.
 - handbook, index, (28) 248.
 - hard tendons, (27) 771.
 - hunting and related activities, (39) 460.
 - houses, (38) 253, 256.
 - incubation periods, (37) 774.
 - injurious—
 - in Norfolk and Oxfordshire, (40) 255.
 - of France, book, (26) 452.
 - to coconuts, (27) 857.
 - grain crops, (26) 855.
 - grapes, (33) 152.
 - rice, (37) 247.

Birds—Continued.

- insect-eating, pellets ejected by, (31) 452.
- lessons on, (28) 598; (31) 394.
- maggot-infested, (40) 351.
- migration, (32) 399; (33) 57; (39) 154, 654; (40) 254, 646.
- migration in Switzerland, (38) 511.
- migration, treatise, (27) 550.
- migratory, protection, (29) 554, 555; (31) 847; (32) 244; (36) 151.
- mortality during nesting period, (32) 150.
- natural enemies of, (38) 54.
- nestling, feeding habits, (28) 450; (38) 457.
- nestling, parasitism by fly larvae, (40) 647.
- nests, edible—
 - analyses, (30) 258.
 - phosphorus content, (27) 461.
- nomenclature, (37) 758; (39) 655; (40) 350, 646.
- observed near Minco, Oklahoma, (40) 646.
- of Alabama, (27) 394.
- America, treatise, (38) 652.
- Anamba Islands, (38) 556.
- Arkansas, (26) 58.
- Australia, food habits, (40) 351.
- Bawean Island, Java Sea, (39) 154.
- British Guiana Botanic Gardens, (40) 163.
- British Isles, list, (35) 355.
- British Isles, treatise, (38) 857.
- cacao fields and sugar plantations, (31) 648.
- California, (31) 846.
- Colombia, treatise, (38) 761.
- Colorado, history and bibliography, (26) 854.
- Connecticut, notes, (40) 351.
- Connecticut, treatise, (30) 454.
- Culebra Island, Porto Rico, (37) 355.
- eastern North America, (36) 151.
- eastern North America, handbook, (27) 549; (30) 752.
- Forrester Island, notes, (40) 351.
- Great Britain, (37) 53.
- Guiana, (26) 654.
- India, feeding habits, (27) 52.
- Indian hills, treatise, (35) 355.
- island of St. Lucia, (26) 451.
- Isle of Pines, (36) 653.
- Java Sea islands, (38) 556.
- Kansas, (30) 752.
- Laysan Island, (27) 549.
- Louisiana, agricultural value, (38) 556.
- Louisiana, insectivorous, (39) 460.
- lower Colorado Valley, (34) 547.
- Massachusetts, list, (27) 452.
- Massachusetts, notes, (40) 647.
- Massachusetts, treatise, (30) 153.
- Michigan, monograph, (27) 549.
- Minnesota, (38) 155.
- Missouri, notes, (38) 556.
- New York, treatise, (32) 447.
- North America—
 - check list, (39) 153, 154.
 - classification, (27) 550.
 - color key, (33) 451.
 - manual, (28) 897.
 - migration, (39) 654.
 - notes, (38) 457; (40) 351.
 - treatise, (33) 553.
- North and Middle America, (26) 346; (30) 851; (35) 851.
- northern New York, guide, (36) 653.
- Ohio, (29) 51.
- Ontario, (31) 57.
- Pennsylvania, (33) 553.
- Porto Rico, (28) 751; (34) 849; (35) 155.
- São Paulo, Brazil, (35) 851.
- South Africa, (26) 552.
- South America, treatise, (37) 758.
- southeastern United States, (36) 151.
- the Americas, catalogue, (39) 759.
- the orchard, (38) 344.
- the Rockies and Pacific coast, handbook, (30) 752.
- Trinidad and Tobago, (31) 57.
- Uganda, (26) 654.
- United States, census, (32) 648; (36) 151.
- Virginia, treatise, (29) 554.
- Washington, treatise, (37) 558.
- west central Oregon, (38) 255.
- West Virginia, (33) 553.
- West Virginia, food habits, (36) 653.
- western United States, handbook, (38) 457.

Birds—Continued.

- outline for study of, (33) 697.
- packing in seaweed, (32) 672.
- parasites of, (26) 882; (31) 184.
- pattern development in, (32) 766.
- photography, (27) 394.
- poisoning in gipsy moth control work, (33) 653.
- propagation, (28) 751.
- protection, (27) 550.
- protection, officials and organizations, (25) 56; (29) 852.
- rate of digestion in, (35) 252.
- red blood corpuscles of, (32) 549.
- regeneration of testis after experimental orchectomy, (30) 266.
- relation to—
 - agriculture, (33) 695.
 - chestnut blight, (29) 754; (31) 57.
 - grasshopper outbreak in California, (28) 351.
 - insect outbreak in California, (26) 346.
 - mammalian tuberculosis, (36) 81.
 - man, treatise, (36) 152.
 - reproduction in, (37) 772; (40) 664.
 - reproductive organs of, (26) 876.
 - secondary sexual characters, (40) 871.
 - shedding of stomach lining, (38) 457.
 - shore, future of, (33) 250.
 - song, destruction by aliens, (27) 355.
 - stomach contents, estimating, (39) 760.
 - stomach examination, (37) 355.
 - studies for schools, (31) 792.
 - study of in schools, (29) 193.
 - survey at Washington, D. C., (40) 646.
 - textbook, (38) 196.
 - treatise, (26) 654; (32) 447; (37) 53; (38) 53, 255, 256; (39) 759.
 - useful, of Minnesota, (32) 753; (40) 254.
 - useful, textbook and guide, (40) 255.
 - value to Texas farmers, (31) 248.
 - wild, propagation, (35) 52.
 - winter, about Washington, D. C., (39) 860.
 - winter, handbook, (40) 254.
- Biscuit weevil, notes, (37) 156.
- Biscuits—
 - army, recipes, (34) 256.
 - army, temperature during baking, (29) 856.
 - artificial coloring, (28) 510.
 - examination, (27) 165.
- Biscutella laevigata, analyses, (33) 466.
- Bishop, W. H., biographical sketch, (39) 400.
- Bison—see also Buffaloes.
 - americanus hybrids, fertility of, (26) 163.
 - europaeus, notes, (27) 371.
- Bispora molinioides, fixation of nitrogen by, (27) 225.
- Biston—
 - hirtarius, studies, (34) 63.
 - suppressaria, notes, (26) 61.
- Bittern, little yellow, new subspecies, (39) 860.
- Bitters, judging, (26) 209.
- Bitterweed, toxicity, (38) 883.
- Bitumens—
 - and bituminous rock, production in United States, (38) 692.
 - fluid, effect of exposure on, (37) 711.
 - specifications and definitions, (35) 888.
 - tests, (29) 687.
 - use in road construction, (27) 291.
- Bituminous—
 - aggregates, toughness, (37) 885.
 - materials—
 - for road making, (28) 186; (35) 390.
 - laboratory manual, (36) 586.
 - methods of examination, (34) 318.
 - testing, (27) 484; (35) 85.
- Blaberus discoidalis, notes, (37) 255, 660.
- Black—
 - bean, toxicity, (26) 278.
 - cutworm, see Cutworm, black, and Agrotis.
 - disease of sheep, studies, (39) 686.
 - flies, see Flies, black, and Simuliidae.
 - head fireworm, see Eudemis vacciniana.
 - Hills beetle, notes, (26) 561.
 - knot—
 - biologic forms, (30) 542.
 - description, (30) 750; (31) 151, 449.
 - fungus-host relationship in, (33) 349.
 - notes, (32) 48.
 - lands of Texas, cropping systems for, (26) 331.

Black—Continued.

- medic—
 - culture experiments, (40) 136.
 - liming experiments, (40) 322.
 - variety tests, (40) 232.
- quarterm—
 - of cattle and sheep, treatment, (35) 784.
 - organism resembling, (26) 883.
- root, betains in, (27) 203.
- rot, chlamydospores of, (28) 152.
- rot of cruciferous plants, studies, (27) 45.
- sage, oil of, (33) 202.
- scale—*see also* *Lecanium oleae*.
 - control by Isaria, (33) 858.
 - in California, (38) 157.
 - notes, (27) 155; (30) 853; (32) 56.
 - parasites, importation into California, (30) 753.
 - parasitism of, (26) 556.
 - studies, (26) 554.
- tongue in dogs, (34) 275, 682.
- Blackberries—
 - acidity, (32) 110; (37) 715.
 - breeding and testing in Minnesota, (40) 148.
 - breeding experiments, (28) 542; (40) 740, 742.
 - cost of distribution, (29) 492.
 - crossing experiments, (33) 44.
 - culture, (31) 441; (32) 141, 639; (34) 42; (38) 246, 643; (39) 242.
 - culture experiments, (28) 436; (38) 41.
 - extracted, sale, (28) 661.
 - fertilizer experiments, (26) 31; (28) 325; (34) 294; (36) 121; (38) 218.
 - for home and commercial planting, (33) 537.
 - Himalaya, notes, (28) 840.
 - inoculation experiments with brown rot fungus, (33) 247.
 - insects affecting, (28) 352.
 - irrigation experiments, (33) 683.
 - picking and packing, (33) 47.
 - preservation by pressure, (32) 416.
 - respiration in gases, (29) 135, 538.
 - sprayed, arsenic on, (38) 55.
 - sterility in, (36) 444.
 - training, (33) 47; (40) 743.
 - utilization, (40) 268.
 - varieties, (28) 542; (37) 243; (38) 246, 643.
 - varieties in Oklahoma, (27) 241.
 - variety tests, (32) 141.
- Blackberry—
 - anthracnose, treatment, (33) 54, 98; (34) 445.
 - bud moth, notes, (28) 355.
 - crown gall, notes, (31) 644.
 - crown gall, studies, (35) 550.
 - diseases, notes, (28) 352; (37) 52; (39) 652; (40) 158.
 - diseases, treatment, (28) 748.
 - double blossom, investigations, (26) 850.
 - juice, preparation, (33) 816.
 - leaf roller, notes, (28) 156.
 - leafhoppers, remedies, (28) 555.
 - Logan, culture, (40) 150.
 - orange rust, notes, (32) 48.
 - orange rust, studies, (37) 457.
 - root borer, giant, notes, (40) 158.
 - rust, notes, (40) 53.
 - rusts, notes and treatment, (29) 50.
 - wine, preparation, (27) 412.
- Blackbird—
 - Brewer, destruction of locusts by, (28) 351.
 - red-winged, environment, life history, and ecology, (32) 151.
- Blackbirds, feeding habits, (28) 450.
- Blackboys of South Australia, (37) 548.
- Black-eyed Susan, variation in, (27) 741.
- Blackhead—
 - fireworm, *see* *Eudemis vacciniana*.
 - in turkeys, (26) 186, 384, 487, 588; (29) 273; (30) 586; (31) 79; (32) 481; (34) 275, 583; (36) 179, 384, 484; (37) 280, 383, 384.
 - in turkeys, etiology, (35) 683.
- Blackleaf 40—
 - insecticidal value, (34) 147.
 - tests, (40) 161.
- Blackleg—
 - atypical, in United States, (34) 276.
 - bacillus and *B. welchii*, resemblance, (38) 587.
 - bacillus, investigations, (31) 579.
 - control in Kentucky, (39) 679.
 - diagnosis, (27) 182; (29) 882; (31) 181, 878.

Blackleg—Continued.

- diseases resembling, (31) 181.
 - immunization, (26) 378, 676; (27) 81, 577; (31) 577, 883; (36) 578; (37) 376, 689; (38) 587, 686; (39) 681, 682.
 - in calves, (26) 483.
 - in pigs, (31) 585; (34) 479.
 - in pigs in Pennsylvania, (34) 276.
 - notes, (26) 373; (40) 86, 778.
 - pathological anatomy of, (26) 177.
 - prevalence in Prussia, (27) 181.
 - studies, (26) 883.
 - toxin, concentration, (39) 683.
 - toxin, studies, (40) 884.
 - toxins in, (26) 676.
 - treatment, (39) 188, 587; (40) 84.
 - vaccine, standardization, (40) 381.
 - vaccine, use, (30) 180.
 - vaccines, strength and composition, (36) 180.
- Blackseed—
 - for lambs, (36) 66.
 - for pigs, (36) 68.
- Blacksmiths Fork, Utah, profile survey, (36) 583.
- Blacksmithing for farms, (27) 484.
- Blackwood, Bombay, notes, (34) 240.
- Blady grass, analyses, (27) 68.
- Blapstinus pimalis, notes, (33) 746.
- Blarina brevicauda, feeding habits, (32) 54.
- Blast furnace—
 - dust, *see* Flue dust.
 - gases, loss of potash in, (37) 630.
 - potash from, (36) 625; (39) 118, 121, 625; (40) 128.
 - slag as concrete aggregate, (39) 87.
 - slag, fertilizing value, (37) 126.
 - slag for acid soils, (36) 728.
- (Blastobasis) *Holococera iceryaella*, notes, (36) 56.
- Blastogenic characters, inheritance of, (28) 531.
- Blastomycosis—
 - and tuberculosis, (39) 187.
 - cutaneous, in horses, (39) 291.
 - hepatic, in geese, (29) 83.
- Blastophaga—
 - in California, (40) 264.
 - nota n.sp., description, (30) 55.
- Blastothrix britannica, studies, (40) 651.
- Blastula as affected by spermatozooids, (29) 66.
- Blattia germanica—
 - as a factor in bacterial dissemination, (30) 250.
 - destruction, (33) 558.
- Blattidae—
 - of North America, (38) 258.
 - physiology of digestion, (38) 558; (39) 558.
- Blattotetrastichus, new genus, description, (37) 768.
- Blau gas for small lighting plants, (28) 788.
- Bleaching powder—
 - disinfection of water by, (34) 885.
 - for use in hot countries, (40) 413.
 - stabilization, (40) 801.
 - use against fly larvae, (34) 160.
- Blepharis edulis analyses and digestibility, (27) 871; (32) 167.
- Blepharocalyx gigantea—
 - oil from, (38) 714.
 - turpentine-like essence from, (38) 447.
- Blepharocorys equi n.sp., notes, (34) 783.
- Blepharoptera serrata, hibernation, (34) 254.
- Blepharospira cambivora n.sp., studies, (39) 554.
- Bletia hyacinthina, glycogen content, (27) 133.
- Blight, insect carriers of, (34) 648.
- Blights, horsehair, notes, (35) 244.
- Blind staggers in horses, (27) 599.
- Blissus leucopterus, *see* Chinch bug.
- Blister beetles—
 - ash-gray, notes, (38) 358.
 - injurious to potatoes, (33) 352.
 - notes, (27) 63, 452; (28) 351, 653, 654, 752; (29) 252; (33) 746.
 - of Mexico, (30) 757.
 - Say's, notes, (28) 158.
- Blister mite—
 - notes, (26) 147.
 - prevalence in apple orchards, (26) 541.
- Bloat in cattle, treatment, (33) 388, 698; (34) 581.
- Bloater paste, creatinin content, (31) 760.
- Blood—
 - agar for streptococci, (40) 881.
 - agglutinating capacity and complement fixing power, (28) 375.
 - albumin, digestibility, (37) 673.

Blood—Continued.

- albumin-globulin ratio in experimental intoxications and infections, (37) 375.
- anaplasma-like bodies in, (35) 782.
- and bone meal, analyses, (36) 765.
- and lymph, amino nitrogen and glucose in, (39) 670.
- antithrombin in, (33) 280.
- as affected by—
 - muscular work, (32) 765.
 - nuclein, (26) 482; (27) 577.
 - underfeeding, (26) 360.
- bacteria, elimination through intestinal wall, (33) 84.
- bactericidal action, (40) 286.
- bacteriology, (27) 284.
- bread, analyses, (33) 865.
- carabao, studies, (27) 785.
- catalase, studies, (40) 364, 365, 766.
- cells—
 - antigenic property, (40) 380.
 - biology of, treatise, (32) 874.
 - of healthy and sick fowls and pigeons, (31) 586.
 - structural transformations, (31) 876.
- changes—
 - due to method of slaughter, (34) 372.
 - during fasting, (30) 867.
 - induced by feeding, (28) 362.
- charcoal as purifying agent for arsenic solutions, (33) 110.
- chlorids, determination, (39) 207, 807.
- cholesterol—
 - content, (31) 465.
 - determination, (39) 716; (40) 15.
 - studies, (40) 767.
- circulating—
 - effect of secretin on, (39) 285.
 - tubercle bacilli in, (26) 281; (27) 480; (29) 480; (30) 581, 683, 783; (32) 476.
- circulation—
 - in man at high altitudes, (33) 366.
 - influence of iodine and sodium iodide on, (40) 274.
- clot, action of chlorinated antiseptics on, (40) 883.
- clotting, prevention by hypochlorite solution, (40) 182.
- coagulation, (37) 177.
- coagulation—
 - as affected by *Ascaris equorum* (26) 279.
 - by sodium nucleinate, (33) 177.
 - relation to anaphylaxis, (40) 380.
- composition as affected by dextrose absorption, (28) 867.
- constituents—
 - morphological, (30) 201.
 - reproduction in immunized horse, (29) 682
- corpuscles—
 - as affected by poisonous fungi, (30) 879.
 - formalinized, use in complement fixation test, (30) 779.
- count of cattle at different altitudes, (31) 679.
- creatin and creatinin in, (40) 274, 765.
- creatin content, determination, (39) 806.
- cryoscopy of, (28) 262.
- culture media from, (36) 676; (37) 220.
- determination of—
 - fat-cleaving action of, (33) 310.
 - phosphoric acid in, (40) 16.
 - potassium in, (40) 116.
 - urea in, (40) 207.
 - uric acid in, (40) 16.
- diseases and disturbances, (32) 78.
- distribution of phosphoric acid in, (40) 176.
- dried, *see* Dried blood.
- examination in glands, (34) 81.
- examination in urine, (30) 201.
- fat and sugar content as affected by hydrazine, (36) 164
 - content, (28) 67.
 - of anemic dogs, (38) 583.
 - studies, (34) 562, 563; (35) 166.
- feeding value, (34) 865.
- fermented, use in bread making, (40) 461.
- flour, analyses, (29) 467; (33) 371.
- fluids, rôle in digestion of bacteria and red blood corpuscles, (36) 379.
- iron content, determination, (39) 507.
- manganese content, (30) 562.

Blood—Continued.

- marginal points in, (33) 478.
- meal—
 - acidity, (35) 770.
 - ammonification and nitrification under laboratory conditions, (30) 218.
 - analyses, (26) 267, 362, 468, 567, 568; (27) 774; (29) 367; (30) 67, 169, 565; (31) 168, 864; (32) 667; (33) 568, 870; (34) 467; (35) 562; (36) 167, 268; (38) 67, 369; (39) 270; (40) 72.
 - composition and feeding value, (36) 369.
 - digestibility, (26) 567.
 - fertilizing value, (34) 24; (35) 126; (38) 422.
 - iron-containing, effect on animals, (29) 671.
 - methods of analysis, (29) 311.
- nitrogen content after feeding, (35) 863.
- nitrogen, nonprotein, estimation, (39) 111.
- of animals as affected by castration, (26) 83.
- Australian animals, (36) 879.
- cows in tick-infested regions, (26) 382.
- domestic animals, pathology, (38) 481.
- fowls affected with leukemia, (29) 285.
- fowls, sexual differences, (37) 773.
- insects, studies, (28) 853.
- laboratory animals, morphology, (28) 777.
- normal and cholera-infected hogs, (32) 582.
- pigs, morphology, (37) 380, 381.
- slaughtered animals as human food, (34) 459.
- steers, composition, (27) 499.
- transfused rabbits, agglutinating principle in, (39) 584.
- tuberculous animals, cell content, (28) 283.
- various species, amino-acid nitrogen in, (37) 206.
- origin and significance of ammonia in, (26) 870.
- parasites of animals, (33) 152.
- pigment and chlorophyll, relation, (32) 711.
- plasma and serum, rotation in various animals, (29) 881.
- plasma chlorids, determination, (39) 807; (40) 714.
- precipitin test, (39) 207.
- preparations, immune, making, (31) 479.
- preservation with formalin, (29) 676.
- pressure—
 - as affected by physical and mental fatigue (32) 664.
 - raising, (36) 677.
 - treatise, (32) 371.
- proteins, studies, (36) 778; (37) 375; (39) 388.
- purin content, (40) 205.
- reaction of different animal species, (35) 880.
- reactions, heredity of, (29) 167.
- rôle in fat metabolism, (39) 671.
- samples, collecting and preserving, (36) 82.
- serum, action on—
 - cane sugar, (34) 675.
 - protein of other animal species, (37) 478.
 - sucrose, (35) 483.
- serum—
 - agglutinins for *Micrococcus melitensis* in, (32) 876.
 - albumin and globulin fractions, (36) 13.
 - antitryptic power, diagnostic value, (29) 477.
 - coagulative and noncoagulative fractions, (37) 177.
 - determination of nonprotein nitrogen in, (40), 310.
 - fertilizing and cytolyzing substance in, (26) 877.
 - hemolysins of, (32) 78.
 - method of obtaining, (38) 181.
 - of cows immunized against tuberculosis, (33) 181.
 - of different animals, (35) 372.
 - primary toxicity, (37) 581.
 - refraction coefficient, (32) 778.
 - yellow pigments of, (31) 274, (32) 18.
- spectrophotometry of, (29) 408.
- sugar—
 - as affected by diet, (34) 562; (37) 64.
 - determination, (39) 112, 611; (40) 116, 310, 713.
 - dialysis, (39) 671.
 - treatise, (31) 277.
- transfusion, use of sodium acetate in, (39) 585.
- tubercle bacilli in, (31) 83.
- work, treatise, (26) 174.
- worms, notes, (28) 158.

- Blossom fly, notes, (32) 651.
 Blossoms, pollinated, protection, (34) 40.
 Blow flies—*see also* *Calliphora* spp.
 life history and remedies, (37) 853.
 notes, (26) 147.
 remedies, (34) 359.
 review of investigations, (29) 656.
 studies, (33) 157; (37) 665.
 Blow fly—
 larvae, reaction to light, (36) 256.
 queen, life history, (30) 656.
 Blue grass—
 analyses, (27) 68; (32) 171.
 as affected by companion crop of clover, (37) 438.
 as forage crop, (31) 829.
 Australian, culture experiments, (30) 632.
 billbug, control, (40) 655.
 composition and digestibility, (36) 469.
 culture experiments, (29) 631; (32) 431, 528; (33) 33.
 culture in Kansas, (40) 330.
 fertilizer experiments, (40) 723.
 growth on volcanic ash, (32) 36.
 growth with legumes, (33) 527.
 hay, ash analyses, (29) 861.
 history in United States, (36) 529.
 in pasture mixtures, (39) 130.
 irrigation experiments, (32) 224.
 Kentucky—
 culture experiments, (28) 431.
 culture in the Ozarks, (29) 427.
 seeding experiments on ranges, (29) 531.
 liming experiments, (38) 219.
 palatability, (34) 865.
 pasture for lambs, (40) 569.
 pastures, management, (31) 37.
 pastures, value of, (35) 868.
 root systems of, (35) 639.
 Sclerotium disease, (39) 753.
 seed—
 adulteration and misbranding, (27) 141; (29) 144.
 germination tests, (30) 437.
 harvesting and curing, (34) 830.
 inheritance of germinability, (31) 834.
 resistance to desiccation, (40) 40.
 viability and germinability, (34) 630, 829.
 seeding on ranges, (30) 35.
 Texas, culture in Hawaii, (32) 729.
 Texas, culture under irrigation, (33) 228.
 yields, (40) 733.
 Blue-gum—
 oil industry in Nilgiris, (38) 8.
 plantations of Nilgiris, (29) 443.
 yield in California, (28) 239.
 Blue—
 joint, Sclerotium disease affecting, (27) 150.
 lettuce, eradication, (40) 430.
 pine bark borer, notes, (26) 351.
 tongue, immunization, (33) 384.
 Blueberries—
 breeding experiments, (33) 637; (35) 647; (36) 443.
 canned, examination, (38) 166.
 culture, (29) 148; (34) 534; (36) 641; (38) 43.
 culture experiments, (35) 647; (39) 47, 347.
 desiccation, (32) 117.
 dried, analyses, (36) 502.
 infection with apple maggot, (32) 350.
 insects affecting, (34) 851.
 wild, taming, (35) 744.
 wood structure, (39) 243.
 Blueberry—
 flea-beetle, studies, (40) 357.
 wine, preparation, (27) 412.
 Bluebirds—
 economic importance, (31) 349.
 feeding habits, (32) 648.
 Bluestone, dosage for sheep, (27) 683; (28) 82.
 Bluetop grass, culture and use, (33) 632.
 Bluets as affected by top dressing, (26) 40.
 Blue-violet rays, notes, (32) 429.
 Blumea balsamifera, distillation, (27) 210.
 Boars, wild, susceptibility to infectious bulbar paralysis, (33) 179.
 Bobolink as a conveyor of Mollusca, (30) 851.
 Bobwhite, food habits, (39) 860.
 Body—
 composition, relation to diet and growth, (36) 663.
 fluids, methods of ash analysis, (32) 114.
 heat, elimination, (35) 768.
 lice, papers on, (38) 765.
 secretion and fluids, man and animal, treatise, (26) 160.
 surface—
 and heat production, relation, (36) 64.
 measurement in man, (34) 68; (36) 64.
 relation to gaseous exchange, (28) 263.
 temperature—
 determination, (26) 466.
 regulation, (28) 666.
 rise during marching, (26) 566.
 variations in, (32) 564.
 tissues and fluids, salts of, (36) 804.
 weight and length, relation, (40) 872.
 weight, variations in different seasons, (31) 661.
 Boehmeria utilis as affected by tobacco smoke, (26) 230.
 Boengkil, fertilizing value, (37) 123.
 Boerhavia pentandra, analyses and digestibility, (27) 871; (32) 167.
 Boettcheria n.g. and n.spp., descriptions, (33) 158.
 Bog—
 land, reclamation; (35) 215.
 soils and moss, fertilizer experiments, (40) 135.
 soils and moss, water table and root growth in, (40) 211.
 soils, reclamation, (35) 215.
 water, effect on—
 plants, (28) 733.
 plants and biocolloids, (40) 520.
 Tradescantia root hairs, (29) 523.
 water, toxicity, (36) 320; (37) 27.
 Bogeria scudderii n.sp., description, (37) 565.
 Boiler—
 compounds, notes, (30) 620.
 laws in United States and Canada, (34) 588.
 tests, conducting, (31) 590.
 Boilers—
 house heating, tests, (31) 489.
 steam, repairing, (34) 890.
 Bolacothrips sp., notes, (28) 452.
 Bolax sp. (?) on bamboo, (32) 352.
 Boletus—
 edulis—
 composition, (30) 804.
 effect on red blood corpuscles, (30) 879.
 harmful effects of, (31) 558.
 histidin betain in, (31) 203.
 nitrogenous constituents of, (28) 501.
 scaber fuscus n.sp., description, (31) 127.
 spp. on tree roots, (37) 756.
 Bolitophila cinerea, notes (33) 253.
 Boll weevil, *see* Cotton boll weevil.
 Bollworm, *see* Cotton bollworm.
 Bolly refuse, feeding value, (40) 366.
 Bologna, detecting horse meat in, (28) 615.
 Bolometer, description, (30) 368.
 Bolts, charts for estimating strength, (35) 87.
 Bomb—
 calorimeter, adiabatic device for, (34) 168.
 calorimeter, construction and operation, (27) 667.
 calorimetry, corrections in, (33) 265.
 Bombias henshawi n.sp., description, (28) 758.
 Bombidae—
 notes, (34) 362.
 of the New World, (28) 758; (30) 59, 754.
 Bombus—
 auricomus, life history, (38) 564; (40) 170.
 n.spp., descriptions, (28) 758.
 nesting habits, (40) 655.
 paper on, (38) 256.
 spp., parasites of, (28) 562.
 spp., pollination of red clover by, (27) 359.
 Bombycilla garrula, synopsis of races, (40) 351.
 Bombycine moths of North America, monograph, (32) 850.
 Bombycomorpha—
 bifascia, larval habit, (31) 752.
 bifascia, notes, (28) 557.
 pallida, notes, (36) 654.
 Bombyx mori, *see* Silk worm.
 Bonasa umbellus—
 coccidiosis in, (26) 187.
 notes, (27) 355.

Bonavist, notes, (26) 362.

Bone—

amount of in meat animals, (31) 564.
analyses, (29) 626; (31) 624; (37) 268.
ash, feeding value, (40) 371.
boiled, use on pastures, (26) 437.
char, analyses, (38) 626.
charcoal, fertilizing value, (31) 139.
charcoal, methods of analysis, (31) 806.
chewing disease, notes, (32) 374.
chop, analyses, (36) 765.
cracked, analyses, (29) 769; (34) 371; (35) 373.
degelatinized, fertilizing value, (35) 428.
dissolved, fertilizing value, (38) 527; (39) 625.
dust, fertilizing value, (27) 337; (31) 139; (38) 519.

effect of calcium nourishment on, (32) 465, 764.
feeds, analyses, (38) 369.
fertilizing value, (29) 129; (35) 219.
flour, steamed, fertilizing value, (27) 535.
granulated—

analyses, (31) 569; (36) 268, 765; (38) 368.
for fowls, (31) 569.

ground—

analyses, (26) 568, 819; (29) 367; (31) 126;
(35) 128; (36) 268; (37) 219; (38) 369.
effect on soil acidity, (28) 137.
fertilizing value, (33) 722; (37) 626.
for pig feeding, (40) 772.
nitrication of (31) 724.

growth, abnormal, in absence of functioning
testicles, (26) 471.

growth as affected by food poor in phosphorus,
(31) 69.

manures, fertilizing value, (29) 737.

meal—

analyses, (26) 325, 362, 665; (27) 872; (28)
265, 364, 523, 627; (29) 769; (30) 67, 565;
(31) 366, 663; (32) 169, 259; (33) 568; (34)
263, 371, 467, 665; (35) 374, 867; (36) 667;
(37) 471; (38) 67; (40) 571.

as affected by calcium carbonate, (26) 428,
527.

availability as affected by fineness, (32) 125.
decomposition by Streptothrix, (27) 620.

effect on composition of bone, (33) 171.

fertilizing value, (26) 426; (27) 337, 639, 835;
(28) 42, 816; (29) 319, 418, 519, 829; (30)
25, 230, 721, 839; (31) 518, 820; (33) 131;
(35) 220, 629; (36) 425; (37) 743; (38) 217,
517, 519, 527, 619; (39) 25, 127, 438, 625,
814.

for moor soils, (39) 438.
steamed, fertilizing value, (34) 219, 519; (39)
220; (40) 218.

steamed, for arid soils, (34) 621; (36) 726.

sterilized, detection, (27) 812.

use on peat soils, (37) 135.

utilization by oats and lupines, (31) 733.

utilization in different soils, (30) 221.

nutrition and growth of, (30) 366.

pathogenic disturbance due to phosphorus de-
ficiency, (32) 561.

precipitate, fertilizing value, (26) 622.

products, analyses, (35) 562.

products and manures, handbook, (30) 221.

residual effects, (37) 23.

steamed and unsteamed, fertilizing value, (30)
126.

unsteamed, importance of grinding, (30) 126.

Boneblack—

analyses, (35) 128.
dissolved, effect on soil acidity, (28) 137.
dissolved, fertilizing value, (33) 723; (35) 220;
(37) 626; (39) 25.

Bones—

breaking strength, (28) 271.

chemistry of, (28) 201.

export from India, (33) 327.

purin content, (40) 205.

use as human food, (34) 659.

Bonito, salt pickled, analyses, (28) 359.

Book lice, fumigation, (39) 161.

Bookkeeping—

for farmers, (26) 595; (27) 794; (28) 191; (30) 793;
(31) 293, 299; (32) 893; (33) 92, 893.

principles of, (32) 494.

textbook, (29) 792.

Books, insects affecting, (26) 354; (28) 159.

Books on—

agaves, (33) 131.

agrarian matters, (29) 391.

agrarian system in England, (32) 793.

agrarianism, (31) 93.

agricultural—

and forest products in British West Africa,
(26) 189.

arithmetic, (30) 197, 795; (36) 597.

associations of Mohammedans of Maghreb,
(30) 593.

bacteriology, (30) 631.

chemistry, (27) 109.

colleges, (36) 791.

commerce, (34) 595.

commerce in France, (31) 596.

cooperation, (26) 92; (28) 487, 790; (29) 89,
188, 595; (30) 191, 693; (31) 389, 593; (32)
792; (33) 694; (38) 190, 191.

cooperation in Denmark, (40) 689.

credit, (26) 594; (28) 389; (32) 892; (33) 294,
393, 787; (34) 595, 894; (37) 391, 888.

development policy of British Empire, (40)
686.

drafting, (30) 490.

drawing and design, (34) 487, 598.

education, (27) 598.

education for teachers, (32) 897.

education in United States and Canada,
(34) 291.

engineering, (29) 484; (33) 681.

facts and figures, (35) 899.

holdings, (28) 790.

Holdings Acts of Great Britain, (39) 89.

holdings in England, (28) 189; (40) 889.

hydraulics, (33) 390.

improvement in England, (38) 90.

institutions, (28) 690.

instruction, (31) 691.

instruction in Haiti, (40) 690.

insurance in France, (37) 888.

labor in Great Britain, (32) 285.

labor in United Kingdom, (30) 791.

laborers in Belgium, (33) 92.

legislation, (31) 293; (36) 393; (38) 493.

legislation, international, (33) 191.

machinery, (27) 387; (28) 290; (30) 892; (35)
494; (38) 492.

organization, (28) 689.

politics in Great Britain, (34) 289.

possibilities in Missouri, (31) 789.

possibilities in United States and western
Canada, (29) 596.

problems in England, (28) 387.

products, commerce in, (29) 293.

products, marketing, (34) 893.

reconstruction in France, (39) 892.

resources of United States, (33) 490.

settlement, intensive, in eastern Prussia,
(30) 692.

statistics, international, (33) 295.

surveying, (30) 888.

teaching, (39) 691.

words, (27) 393.

agriculture, (26) 94, 189, 191, 297, 391; (27) 598,
897; (28) 298, 387, 392, 393, 690, 826, 897; (29)
594; (30) 195, 692; (31) 494; (32) 131, 290, 429;
(33) 494, 791, 793; (34) 689; (35) 30, 92; (36)
394; (37) 728, 795, 888; (38) 496, 899; (39) 898;
(40) 897.

agriculture—

and preparedness, (37) 389.

elementary, (29) 93, 193, 298; (30) 196, 496,
597, 598, 695, 795; (31) 196, 693; (33) 95, 297,
597, 898; (34) 93, 196, 395, 493, 598; (36)
596, 692; (39) 692; (40) 795.

in Belgian Congo, (31) 789; (40) 390, 392.

Berkshire, (40) 590.

Brazil, (26) 189.

California, (35) 194.

China, Korea, and Japan, (27) 518.

Cuba, (40) 194.

England, (28) 488, 689; (31) 94.

England and Wales, (36) 789.

France, (40) 590.

France, in war time, (38) 90.

French colonies, (40) 590.

Germany, (29) 596; (30) 594.

Germany and France, (28) 293.

Books on—Continued.

agriculture—continued.

- in Great Britain, (30) 297; (37) 291, 595, 697; (39) 592; (40) 589, 790.
- India, (34) 95; (40) 823.
- Morocco, (40) 791.
- New Jersey, (31) 196.
- northern Africa, (31) 789.
- relation to European war, (38) 93.
- Russia, (30) 896.
- South America and Western Europe, (31) 895.
- the South, (40) 897.
- tropical America, (31) 595.
- Tunis, (31) 492.
- United States, (32) 891.
- of Indo-Germanic people, (27) 691.
- substances important in, (40) 801.
- tropical, (30) 395; (32) 227; (33) 397; (35) 896; (40) 622.
- agronomy, (34) 598.
- air, water, and food sanitation, (33) 258.
- alcohol production by yeast, (29) 714.
- alfalfa, (28) 737; (31) 831; (32) 828.
- alfalfa culture, (40) 526.
- Alpine flowers, (26) 139.
- anaphylaxis, (31) 277.
- anatomy, (28) 178, 668.
- anatomy of domestic animals, (30) 276; (32) 78.
- anatomy of the horse, (32) 278, 682.
- anatomy, pathologic, (27) 576; (31) 276.
- anesthesia and narcosis of animals and birds, (35) 379.
- animal—
 - breeding, (26) 573; (27) 469; (28) 68, 271, 795; (33) 71, 168, 267; (36) 667.
 - castration, (32) 578.
 - communities in temperate America, (32) 549.
 - diseases, (26) 82, 481, 677; (27) 77, 679; (28) 778; (29) 880; (32) 371, 874; (35) 379; (36) 477, 478; (37) 876; (40) 778.
 - ecology, (30) 454.
 - enemies of agricultural plants, (32) 752.
 - experimentation and medical progress, (33) 876.
 - feeding, (31) 468.
 - heat and bio-energetics, (26) 265.
 - husbandry, (29) 570, 598.
 - micrology, (37) 155.
 - morphology, (38) 572.
 - nutrition, (30) 67.
 - parasites, (27) 779; (31) 478, 576.
 - parasites and diseases, (32) 79.
 - parasites and human disease, (39) 582.
 - parasites of man, (36) 152, 354.
 - pests and plant diseases, (28) 752.
 - production, (35) 167.
- animals, (27) 452, 492.
- animals—
 - color disguise in, (26) 246.
 - domestic, (26) 165; (32) 494.
 - domestic, feeding, (36) 597, 666.
 - domestic, in health and disease, (32) 874.
 - of America, (27) 855.
 - wanderings of, (31) 57.
 - wild, of North America, (35) 354; (40) 646.
 - wild, of the world, (39) 859.
- anthocyanin pigments of plants, (37) 633.
- antiseptics, (39) 184.
- ants of Great Britain, (35) 262.
- apple diseases and pests, (30) 642.
- apples, (27) 538; (34) 342.
- apples and pears, (26) 45.
- apples, German varieties, (31) 46.
- apples, household use, (40) 173.
- arachnids, (33) 553.
- Arbor Day, (27) 598.
- arboriculture, (33) 537.
- arithmetic, (37) 95, 297, 598.
- asses, (31) 470.
- asters, (28) 438.
- atmospheric circulation and radiation, (34) 414.
- Audubon, the naturalist, (39) 654.
- bacteria, (29) 422; (31) 80.
- bacteria—
 - and protozoa, (28) 78.
 - in relation to plant diseases, (27) 44; (31) 745.
 - nitrogen collecting, (29) 824.
 - yeasts, and molds, (27) 727.

Books on—Continued.

- bacterial cell, (27) 476; (28) 425.
- bacteriology, (26) 174, 882; (27) 76, 329, 423; (28) 332, 675; (31) 177; (32) 33, 371, 577; (34) 876; (36) 130, 177; (39) 283, 430.
- bacteriology—
 - agricultural, (35) 328; (39) 430.
 - and diagnosis, (31) 376.
 - and vaccine therapy, (31) 875.
 - applied, (40) 577.
 - blood work, and animal parasitology, (36) 574.
 - household, (29) 298.
 - of food and water, (32) 311.
 - of water, (29) 814.
- bakeries, (26) 762.
- bananas, (30) 741.
- banking reform in United States, (28) 191.
- barley, (30) 230.
- bases, natural, (32) 201.
- beekeeping, (26) 253; (28) 257; (29) 57; (33) 563; (36) 158; (37) 568, 769; (38) 164, 364, 564; (39) 768; (40) 264, 358.
- bees, (26) 658; (27) 759; (34) 362, 556, 657.
- bees, embryology, (34) 362.
- bees, wild, (35) 468.
- beet sugar, (28) 413.
- beetles, (40) 552.
- beriberi, (32) 858; (33) 365.
- beverages, (28) 163, 565.
- beverages and vinegars, homemade, (40) 116.
- biochemical catalysts, (38) 611.
- biochemical methods, (27) 107.
- biochemistry, (26) 106, 306; (28) 201, 607; (29) 201, 408; (30) 201, 310, 707, 801; (34) 607; (35) 8; (39) 607.
- biology, (26) 364, 392, 393; (27) 754; (28) 271, 369, 393, 765, 876; (30) 564.
- biology and its makers, (34) 263.
- biology, general and medical, (37) 76.
- bird migration, (27) 550.
- birds, (26) 393, 654; (32) 447; (37) 53, 558, 758; (38) 53, 94, 196, 255, 256; (39) 759; (40) 254, 255.
- birds—
 - cage, (30) 696.
 - domestic, (30) 872.
 - game, of California, (40) 646.
 - in captivity, (33) 152.
 - in relation to man, (36) 152.
 - injuriously, of France, (26) 452.
 - of America, (38) 652.
 - British Isles, (35) 355; (38) 857.
 - British Isles, feeding habits, (39) 249.
 - Colombia, (38) 761.
 - Colorado, (26) 854.
 - Connecticut, (30) 454.
 - eastern North America, (27) 549; (36) 151.
 - Indian hills, (35) 355.
 - Massachusetts, (27) 452; (30) 153.
 - Michigan, (27) 549.
 - North America, (28) 897; (30) 752; (33) 451, 553.
 - North and Middle America, (30) 851; (35) 851.
 - northern New York, (36) 653.
 - Virginia, (29) 554.
 - western United States, (38) 457.
 - wild, propagation, (35) 52.
- bituminous materials, (36) 586.
- blood cells, biology of, (32) 874.
- blood pressure, (32) 371.
- blood sugar, (31) 277.
- blood work, (26) 174.
- body secretions and fluids of man and animals, (26) 160.
- bone products and manures, (30) 221.
- botany, (26) 227, 596; (27) 328, 423; (28) 435, 820; (30) 428, 520; (31) 425; (32) 219, 520; (33) 27; (36) 429; (37) 220, 818; (38) 728; (39) 222.
- botany, high-school, (40) 898.
- bread, (27) 267; (29) 361, 660.
- bread and bread cereals, (32) 659.
- bread making, (26) 357; (31) 657, 855; (37) 165.
- bridge foundations, (35) 686.
- bridges—
 - and culverts, concrete, (35) 390.
 - concrete, (36) 285.
 - reinforced concrete, (30) 788.
- broom corn culture, (29) 737.
- building and construction methods, (29) 86

Books on—Continued.

- building construction, (31) 386.
- bulbs, (26) 337; (31) 743; (32) 143; (35) 450; (36) 643.
- bumblebees, (28) 562.
- Burbank, Luther, (34) 440; (37) 342.
- Burbank's plant breeding work, (32) 143.
- butter, (31) 468; (40) 283.
- butter industry in United States, (35) 278.
- butter making, (26) 275, 778; (38) 281.
- butter making on the farm, (33) 577; (37) 175.
- butterflies, (27) 558; (34) 552; (38) 260.
- butterflies and moths, (37) 353.
- butterflies of Australia, (34) 453.
- cabbage, (37) 543.
- cacao, (26) 47; (30) 533, 712, 741; (32) 235, 745; (39) 448, 544; (40) 158.
- cacao culture, (28) 542.
- cacao culture in Bahia, (33) 240.
- cacao products, (29) 312.
- California Redwood Park, (29) 44.
- calorimetric methods, (26) 872.
- camp cookery, (38) 469.
- candy making, (29) 60; (31) 558; (32) 253, 560.
- cane sugar factories, chemical control in, (37) 509.
- cane sugar manufacture, (29) 432; (35) 114; (38) 508.
- canned foods, (30) 613.
- canning, (35) 717; (39) 317, 716.
- canning—
 - and drying, (39) 208, 718, 808.
 - and preserving, (36) 113; (38) 114.
 - of fruits and vegetables, (36) 717.
 - preserving, and pickling, (32) 253.
- carbohydrate metabolism and internal secretions, (30) 380.
- carbohydrates, (30) 610.
- carbohydrates and glucosids, (28) 710.
- carbon bisulphid as an insecticide, (34) 249.
- carburation, (31) 785.
- carinations, (26) 139, 337; (27) 41; (28) 438; (31) 743; (34) 44; (38) 44.
- carinations, perpetual flowering, (39) 449.
- carob, (37) 747.
- casein, (29) 312.
- cassava, (40) 435.
- castor oil plant, (40) 234.
- castration of animals, (33) 176; (34) 477.
- catalysis, (29) 504; (34) 312; (35) 801.
- catalyzers, biochemical, (32) 662.
- caterpillars, (31) 850.
- cattle, (27) 277; (28) 769; (30) 170; (31) 468; (34) 467; (39) 673, 881.
- cattle—
 - Aberdeen-Angus, (33) 72.
 - ancestry, (28) 466.
 - diseases, (26) 485; (34) 477, 478.
 - feeding and dairying, (32) 258.
 - feeding and management, (37) 172.
 - Guernsey, (40) 179.
 - Hereford, (33) 73.
 - industry in Württemberg, (28) 873.
 - judging, (27) 571.
 - measurements, (27) 675.
 - Moravian, (26) 268.
 - raising, (29) 363.
 - raising on western ranges, (29) 666.
 - Shorthorn, (35) 169; (39) 673.
- cecidia of central and northern Europe, (26) 658.
- cellulose, (30) 202; (37) 112; (39) 614.
- cellulose chemistry, (28) 312.
- cement and concrete, (35) 289.
- cereal foods, (36) 560.
- cereals, (34) 598.
- cereals and forage crops, (30) 696.
- cereals, ground, in the diet, (29) 564.
- cheese, (26) 479.
- cheese, Camembert, (37) 176.
- cheese making, (28) 475; (40) 283.
- chemical—
 - analysis, (27) 609; (29) 203, 307, 506; (30) 309; (31) 803; (34) 711; (35) 11; (37) 310, 614, 802.
 - calculations, (36) 411.
 - constitution and physiological action, (36) 411.
 - French, (39) 418.
 - German, (40) 709.
 - industry, electrolysis in, (40) 109.
 - mixing, stirring, and kneading, (27) 14.
 - pathology, (32) 78; (39) 79.
 - technology, (27) 14; (29) 413.

Books on—Continued.

- chemicals, (38) 810.
- chemistry, (27) 107, 205, 806; (28) 407; (29) 792, 801; (30) 309, 310, 610, 695, 707; (32) 801; (34) 407, 599; (35) 8; (37) 108; (39) 8, 501, 607; (40) 10, 109, 308, 408, 709, 801.
- chemistry—
 - agricultural, (30) 10, 309; (32) 501; (35) 501; (37) 598, 801.
 - analytical, (32) 501.
 - applied analytical, (40) 10.
 - colloid, (34) 801; (38) 309, 501; (40) 408.
 - household, (30) 63; (32) 558, 854; (34) 458.
 - industrial, (29) 107.
 - inorganic, (40) 801.
 - of plant products, (31) 803.
 - of the farm and home, (36) 692.
 - of urine, (26) 809.
 - organic, (31) 309; (32) 109; (34) 801; (40) 408, 709.
 - physiological, (26) 201; (31) 361; (34) 563, 607; (35) 311; (40) 109, 308.
 - physiological and pathological, (29) 267.
 - technical, (32) 308; (34) 801.
- Chenopodium quinoa, (39) 610.
- cherries, (32) 338; (36) 641.
- cherries of New York, (33) 439.
- children, care and feeding, (40) 560.
- children, care, diet, and common ills of, (30) 260.
- chlorid of lime in sanitation, (29) 512.
- chlorophyll, (30) 311.
- chrysanthemums, (28) 543; (37) 44; (40) 540.
- church and country life, (36) 92.
- churches, country, (31) 391; (32) 388; (33) 190.
- chymology, (31) 265.
- cinchona, (33) 343.
- citrus fruits, (30) 444; (33) 441; (35) 448; (38) 446.
- citrus fruits, wild and cultivated, (39) 142.
- climate, (39) 16.
- climate—
 - and weather, (28) 211.
 - and weather of San Diego, California, (31) 21.
 - of France, (36) 510.
 - of Switzerland, (27) 15.
- climatic changes, (32) 417.
- climatic changes in arid America, (31) 509.
- climatology, (26) 613.
- cloth making, (40) 899.
- clothing, (36) 497.
- clothing and health, (36) 396.
- clover, (29) 140.
- Coccidae, (28) 556.
- cocoa and chocolate, (26) 662, 710.
- coconut culture, (39) 449; (40) 247.
- coconuts, (27) 146; (29) 840; (31) 239; (32) 236, 339; (36) 445; (37) 345.
- coffee culture, (39) 449, 846.
- coffee culture in Java, (31) 639.
- coffee culture in Uganda, (30) 741.
- coffees of Dutch East Indies, (30) 43.
- cold storage, (33) 892.
- Coleoptera of British India, (29) 57, 358.
- colic in horses, (32) 584.
- colics and their treatment, (31) 382.
- colloidal solutions, (36) 108; (37) 501.
- colloids, (32) 308; (33) 801; (35) 501.
- colloids in biology and medicine, (27) 881.
- color in relation to chemical constitution, (40) 505.
- color standards in biology, (29) 762.
- commercial geography, (28) 298.
- concrete, (28) 186; (36) 188, 285; (37) 590.
- concrete—
 - construction, (27) 484, 645; (31) 186; (32) 188; (35) 390.
 - construction inspection, (30) 487.
 - on the farm, (38) 87, 291.
 - reinforced, (27) 688.
 - roads, (30) 386, 589.
- condiments chemistry, bacteriology, and technology, (32) 558.
- conifers, (26) 642.
- conifers of British Isles, (28) 843.
- conifers of central Europe, (30) 742.
- cooking, (26) 66, 261; (27) 461, 568; (28) 259, 493, 566, 863; (29) 61, 362, 464, 661, 766; (30) 259, 365, 462, 559, 560, 763, 862; (31) 259, 260, 557, 857; (32) 255, 358, 394, 495, 558, 662, 763; (33) 165, 662, 753; (34) 395, 794; (37) 94, 894; (38) 167, 469, 567, 568; (40) 693, 899.
- cooking, army, (37) 63, 166.

Books on—Continued.

- cooking, Chinese, (40) 560.
- cooking, French, (32) 662.
- cooperage, (29) 644.
- cooperation in Russia, (39) 191.
- cooperation, industrial, (29) 594.
- cooperative finance, (28) 790.
- corn, (31) 331, 898; (34) 529; (37) 94.
- corn among Indians of the upper Missouri, (39) 738.
- corn and sorghum, (30) 635.
- corn culture, (27) 640; (29) 830; (32) 228, 434, 829.
- corn culture for school children, (38) 93.
- cost of living, (30) 559; (32) 662; (33) 694; (38) 392; (40) 173.
- cost of living in Portugal, (39) 191.
- cotton, (26) 190, 332, 437, 535; (28) 631; (29) 738; (31) 525, 735; (32) 434; (33) 433; (35) 230, 639.
- cotton—
 - as a world power, (36) 894.
 - boll weevil, (31) 457.
 - bollworm, pink, (40) 856.
 - culture, (30) 831.
 - culture in Egypt, (30) 527.
 - forecasting yield, (39) 191.
 - statistics, (34) 595, 691.
 - trade, (31) 690.
- country churches, (29) 190, 294.
- country girls, (34) 290.
- country homes, (40) 486.
- country life, (28) 687, 692; (39) 299.
- country towns, (36) 238.
- cow-testing associations, (26) 169.
- creamery practice, (30) 271, 275.
- crop production, (32) 393.
- crops, (28) 298, 493, 632; (36) 692.
- cultivation, (29) 329.
- cultivation, ridge method, (28) 632. ●
- cyanamid, (29) 518.
- cypresses, (33) 49.
- daffodils, (32) 143; (34) 741.
- dahlias, (29) 441; (36) 743.
- dairy—
 - and food laws of Minnesota, (30) 877.
 - bacteriology, (27) 74; (30) 378, 677; (32) 577.
 - cattle, (37) 574.
 - chemistry, (32) 501.
 - farming, (40) 590.
 - laboratory exercises, (37) 872.
 - laboratory work, (31) 792.
 - practice, (30) 271.
 - technology, (28) 878.
- dairying, (26) 78, 574, 674; (27) 176; (28) 176; (29) 93, 775; (31) 76, 173, 395, 475, 494, 694; (32) 173, 258, 291; (34) 670; (35) 378; (37) 94, 172, 894.
- dairying in Australasia, (28) 878.
- Dalmeny Experiment Station, work, (31) 516.
- dams and weirs, (35) 288.
- dams, earth, (29) 289.
- Darwinism, (27) 175.
- dates, (30) 238.
- deer breeding, (29) 171.
- dew ponds, (33) 806.
- diagnosis, (36) 412.
- diagnostic methods, (27) 284.
- diet, (26) 262; (27) 269; (29) 267, 360, 661; (30) 259, 463; (32) 561; (37) 469; (40) 68, 561, 659, 865, 866.
- diet—
 - and dietetic therapeutics, (35) 858.
 - and hygiene in schools, (29) 363.
 - cooking, and hygiene in schools, (31) 261.
 - of working women in Boston, (38) 64.
 - uric-acid-free, (31) 361.
- dietaries for institutions, (40) 866.
- dietetics, (26) 658; (28) 257; (29) 163; (31) 557, 859.
- digestion as affected by emotions, (33) 566.
- Diptera, (34) 654.
- Diptera, Danish, (33) 263.
- disease transmission by flies, (30) 552.
- diseases, infectious, (27) 76.
- diseases of wild animals, (34) 576.
- disinfection, gaseous, (26) 173.
- dissection of domestic animals, (26) 578.
- dog diseases, (36) 183.
- dog medicine and surgery, (32) 783.

Books on—Continued.

- dogs and cats, parasites and diseases, (31) 586.
- drafting, (31) 592.
- dragonflies, (39) 558.
- drainage, (26) 588; (33) 585, 586; (35) 788; (37) 587.
- drug analysis, (34) 713.
- drugs, (26) 277; (39) 884.
- dry farming, (28) 393; (32) 430; (40) 823.
- ducks, Indian Runner, (30) 873.
- dyestuffs, (39) 506.
- earth pressure, retaining walls, and bins, (35) 786.
- earths, rare, and their acids, (30) 205.
- earth work haul and overhaul, (30) 487.
- earthworms, (28) 451.
- economic associations of rural Poland, (31) 690.
- economic conditions in Serbia, (40) 791.
- economic cycles, (35) 496.
- edaphon, (30) 323.
- education, (33) 596.
- eggs, preparation, (37) 668.
- electric heating, (37) 387.
- electrical engineering, (29) 893.
- electricity—
 - agricultural, (26) 893.
 - for the farm, (27) 388; (30) 589; (33) 690.
 - relation to vegetation and agricultural products, (27) 231.
- electrochemistry, (26) 818.
- embryology of chicks and pigs, (29) 371.
- engineering, (29) 289.
- engineering—
 - formulas and memoranda, (32) 188.
 - highway, (27) 189; (30) 289; (34) 586.
 - river and canal, (32) 481.
 - structural, (33) 487.
- engines, (31) 385.
- engines—
 - gas, gasoline, and oil, (34) 287.
 - gasoline, (29) 86; (32) 788.
 - internal combustion, (29) 184; (31) 92, 590.
- entomological nomenclature, (27) 551.
- entomology, (27) 998; (28) 451; (29) 555, 853; (30) 745, 851, 852; (31) 349; (38) 93, 357.
- entomology—
 - agricultural, (35) 355.
 - economic, (32) 56; (33) 652.
 - medical, (32) 846.
 - medical and veterinary, (34) 850.
- enzymes, (28) 202; (32) 19, 662; (39) 110.
- enzymes, chemistry, (30) 409.
- equitation, (28) 269.
- essence industry, (35) 717.
- eucalypts, (30) 447; (39) 146, 351.
- eucalyptus culture, (27) 442.
- evolution, (26) 365, 470; (28) 876; (33) 552; (37) 432, 573.
- exercise in education and medicine, (34) 261.
- farm—
 - accounting, (29) 792; (31) 293; (32) 494; (33) 92, 893; (39) 496.
 - and forest, (26) 391.
 - and school problems for high schools and normals, (34) 793.
 - boys and girls, (26) 899.
 - buildings, (26) 894; (27) 892; (28) 290, 487; (29) 186, 689; (31) 291; (35) 587; (36) 891; (37) 90, 789.
 - buildings and machinery, (26) 686.
 - business arithmetic, (33) 899.
 - crops, (30) 133; (35) 593.
 - crops, feeding of, (34) 326.
 - economics, (30) 795.
 - equipment, (37) 388.
 - equipment in Minnesota, (31) 93.
 - houses, (28) 188; (31) 591.
 - leases, (35) 589.
 - life, (29) 598.
 - management, (28) 789; (31) 494; (32) 393.
 - management and credit, (39) 689.
 - mortgages, (36) 688.
 - motors, (31) 186.
 - practice, (35) 93.
 - science, (40) 295.
 - shop work, (33) 792.
 - woodwork, (35) 298.
- farmers, organization, (40) 193.

Books on—Continued.

- farming, (26) 298, 691, 693; (29) 293; (30) 141, 193; (31) 787; (32) 291, 429; (34) 635, 796; (35) 696, (36) 897; (37) 290; (38) 297; (39) 89; (40) 95; 193, 589, 590.
- farming—
costs, determination, (40) 192.
in China, Korea, and Japan, (26) 290.
in England, (33) 93; (38) 192.
in England, war-time, (40) 790.
intensive, in India, (32) 131; (39) 834.
- fats and oils, edible, (26) 258.
- fats, oils, and waxes, (31) 201.
- fauna of America, (27) 855.
- fauna of British India, (37) 54, 765.
- fauna of Hawaii, (29) 250.
- faunas of natural regions of the globe, (31) 846.
- Federal Farm Loan Act, (39) 89.
- Federal farm loan system, (36) 688.
- feeding—
farm animals, (28) 465, 898; (30) 67; (31) 563; (37) 94, 795.
infants and young children, (26) 763.
school children, (33) 364, 864.
stuffs, (28) 265.
the poorer classes, (33) 166.
- feeds and feeding, (26) 164; (34) 261, 565; (37) 767.
- fences, gates, and walls, (33) 291.
- fermentation, alcoholic, (29) 714; (34) 318.
- fermentation processes in breweries, distilleries, and yeast factories, (29) 509.
- ferments, (30) 77, 311, 610.
- ferments, defensive, of the animal organism, (31) 278; (32) 270.
- fertilizer industry, (36) 124, 817.
- fertilizers, (26) 34, 124, 725; (27) 123, 327; (29) 193, 213, 517; (31) 323, 517; (33) 398; (34) 23, 29; (36) 119; (37) 724; (38) 119; (39) 724; (40) 421.
- fertilizers and crops, (27) 215.
- fertilizers and manures, (30) 24.
- fertilizers for truck crops, (29) 837.
- fiber plants, (30) 436; (34) 829.
- fibers, (40) 333, 435.
- fibers, textile, chemical technology of, (32) 308.
- field crops, (28) 493; (31) 791; (40) 622.
- field crops—
culture in Russia, (35) 636.
for the cotton belt, (36) 897.
of India, (33) 526.
- field management and crop rotation, (33) 429.
- flavoring compounds, (33) 164.
- flavoring extracts, (28) 863.
- flax culture, (33) 133, 731.
- flax, culture and preparation, (40) 827.
- flax culture in Argentina, (34) 434.
- fleas, (30) 554.
- flies, (30) 552.
- flies, bloodsucking, in relation to disease, (33) 560.
- flora of—
northwest coast of United States, (34) 336.
southeastern Washington and adjacent Idaho, (31) 731.
the Northwest, (30) 521; (32) 898.
vicinity of New York, (33) 429.
western United States, (38) 732.
- floriculture, (34) 535, 836.
- flour milling, (29) 263.
- flour, starch, bread, etc., methods of analysis, (32) 505.
- flower gardens, (29) 239; (33) 738, 899; (35) 345, 745.
- flowering plants, (26) 35.
- flowers, (30) 238; (31) 35, 143; (37) 145, 630, 746.
- flowers—
in California, (31) 837.
of the woods, (33) 541.
of western United States, (33) 842.
shrubs, etc, in California, (33) 441.
wild, (35) 450.
- food, (33) 364; (39) 195, 567, 614, 768, 899.
- food—
accessories, (29) 265.
adulteration, (26) 65, 355.
analysis, (29) 204, 506; (30) 710; (33) 206; (34) 506, 610, 713; (37) 508.
and drug laws in United States, (29) 266.
and drug legislation, (32) 65.
and Drugs Act decisions, (32) 254.

Books on—Continued.

- food—continued.
and household management, (31) 298.
and nutrition, (30) 63; (36) 396, 497; (38) 661.
and sanitation, (32) 659.
bacteriological examination, (38) 11.
beverages, and toilet accessories, (32) 162; (36) 63.
chemistry, (29) 598; (32) 854.
chemistry, bacteriology, and technology, (32) 553.
conservation, (38) 94; (40) 659.
in war time, (38) 662.
industries, (32) 653.
inspection, (28) 259; (33) 67.
materials and condiments, (30) 763.
preparation and service, (32) 65.
preservation, (29) 264; (40) 808.
products, source, chemistry, and use, (32) 353.
reforms, modern, (32) 66.
requirements, appetite, and hunger, (31) 859.
selection, (36) 762.
statistics, (40) 765.
supply of Germany, (29) 162; (40) 561.
supply of Great Britain, (29) 162; (36) 290.
tables, (38) 469.
values, (36) 663.
- foods, (26) 65, 251, 355; (27) 207, 270, 365, 567, 868; (28) 163; (29) 360, 412; (37) 94, 166, 894; (40) 173, 361, 459, 559, 795.
- foods and candies, (31) 856.
- foods in the home and market, (31) 68.
- foods, wild, of Great Britain, (40) 360.
- foot-and-mouth disease, (35) 280.
- forage crops, (28) 632; (34) 593.
- forage plants and their culture, (32) 827.
- forest—
fire control, (39) 352.
flora of Bengal, (26) 49.
flora of New South Wales, (39) 145.
insects of Central Europe, (32) 151.
insects of India, (32) 351.
law in America, (37) 836.
mensuration, (33) 298.
physiography, (26) 338.
policy of France, (33) 541.
products of India, (27) 541.
protection, (31) 143.
surveying, (26) 644.
trees and timber supply of China, (33) 50.
valuation, (32) 840.
- forestry, (26) 140, 338, 542, (27) 41, 42, 95, 444, 598; (28) 193, 544, 644; (30) 44, 146, 742; (31) 49, 640; (32) 46, 692; (35) 240, 346, 543, 648, 841; (36) 242, 596; (37) 243; (38) 751; (39) 50; (40) 151.
- forestry—
for high schools, (33) 298.
for rangers and woodmen, (36) 446.
in Great Britain, (27) 646; (36) 143.
New England, (27) 646.
Pacific Northwest, (26) 49.
Tunis, Algeria, and Corsica, (37) 650.
terms, (31) 840.
- forests, national, (39) 648.
- forests of the Far East, (30) 45.
- forests, protection against animals, (35) 851.
- fowls, anatomy, (37) 772; (40) 483.
- fowls, Campines, (33) 273.
- foxes, (31) 770.
- fresh-water biology, (39) 554.
- fruit—
and vegetables, conservation, (36) 615.
culture, (26) 45, 741; (29) 837; (31) 394; (32) 337; (34) 533; (37) 41, 544; (38) 446.
diseases, (37) 151.
growing, (33) 438, 639; (39) 543.
marketing, (36) 443.
propagation, (36) 140.
- fruits, (27) 344, 439.
- fruits—
drying, (40) 615.
for cider and perry making, (28) 437.
of California, (27) 439; (31) 836.
of Hawaii, (26) 741.
of Ontario, (31) 336.
preserved, (28) 258.
small, (37) 544, 648.
tropical and subtropical, (27) 645.

Books on—Continued.

- fungi, (27) 149, 329, 727.
- fungi and lichens of Great Britain, (27) 25.
- fungi of Japan, (38) 426.
- fungicides, (31) 517.
- fur, (34) 570.
- fur-bearing animals, (40) 646.
- fur farming, (27) 774; (29) 672.
- fur farming in Canada, (32) 870.
- fur trade, (26) 772.
- furs and skins, home manufacture, (38) 13.
- galls of plants, (26) 242.
- game and fish laws of various States and of Canada, (30) 153.
- game animals, (33) 77.
- game, fish, and forestry laws, (32) 150.
- game protection and propagation in America, (30) 153.
- garden—
 - architecture, (31) 536.
 - crop manuring, (31) 336.
 - design, (31) 239, 743.
 - furniture and accessories, (37) 746.
 - insects, (40) 649.
 - ornaments, (36) 644.
 - plans, (35) 841.
 - plants, diseases and pests, (39) 444.
- gardening, (26) 47, 298, 337, 393, 538, 693, 899; (27) 41, 442, 842; (28) 538, 642, 838; (29) 42, 341, 441, 495, 840; (30) 40; (31) 140, 142, 143, 236, 239, 340, 532, 791; (32) 232; (33) 398, 898; (34) 39, 340, 345, 635, 833, 836; (35) 36, 444, 445, 741; (36) 535, 639, 693, 743, 744; (37) 94, 145, 543, 645, 742; (38) 39, 94, 344, 842; (39) 139, 240, 245, 899; (40) 245, 340, 444, 536, 638, 640.
- gardening—
 - for little girls, (38) 297.
 - in city backyards, (33) 540.
 - in Saxony, (26) 842.
 - indoor, (30) 238.
 - market, (36) 639.
 - ornamental, (33) 143, 442; (34) 238, 345, 535; (35) 42, 648; (36) 142, 143, 639, 643, 644; (37) 145, 346, 746.
 - ornamental, in Europe, (30) 644.
 - tropical, (32) 45.
- gardens in America, (35) 345.
- gardens, Italian, (33) 644.
- gardens, mountain, (34) 45.
- gas cooking, heating, and lighting, (33) 753.
- gas engines, (28) 84, 384; (30) 487; (36) 287, 587.
- gaseous exchange of animals and man, (36) 266.
- genetics, (28) 876; (30) 264; (31) 70; (34) 563; (39) 671.
- genetics and eugenics, (40) 274.
- genetics, laboratory course, (40) 693.
- geography, (31) 793.
- geology—
 - agricultural, (36) 617.
 - engineering, (32) 784; (35) 489.
 - in relation to agriculture and sanitation, (30) 212.
- ginseng and golden seal, (27) 346.
- glycosuria and allied conditions, (30) 277.
- glycosuria and diabetes, (32) 474.
- goats, (34) 270.
- gooseberries, (30) 42.
- grain and feeding stuffs drying, (27) 669.
- grain, forage, and pasture crops, (29) 530.
- grain inspection in Canada, (33) 228.
- grain production in Switzerland, (40) 525.
- grains, (27) 638.
- grains, small, (35) 593.
- granger movement, (30) 693.
- grape berry moths, (34) 553.
- grapes, (27) 539; (30) 43.
- grapes, history and culture, (33) 736.
- grasses, (29) 139; (32) 133.
- grasses, British, (40) 525.
- grasshoppers, (38) 359.
- green manure farming, (26) 425, 817.
- green manures and manuring in the Tropics, (37) 28.
- greenhouses, (38) 39.
- ground levels in democracy, (34) 796.
- ground water supply, (32) 685.
- grouse, (26) 146.
- growth and form, (40) 566.
- guinea pigs, (30) 874; (37) 775.
- hardwoods of central Europe, (31) 538.

Books on—Continued.

- hay, (28) 829.
- hay tonnage tables, (33) 228.
- heather burning for grouse and sheep, (40) 667.
- heating and ventilation, (29) 390.
- hematology, (38) 481.
- herbs, (26) 239; (36) 743.
- herbs, culinary, (28) 259.
- heredity, (26) 161, 272, 365; (28) 876; (31) 466; (33) 869.
- heredity—
 - and development, (30) 564.
 - eugenics, (28) 271.
 - evolution, (29) 665.
 - sex, (30) 767.
 - vigor, (35) 371.
- in horses, (30) 269.
- in plants, (26) 325.
- hides and skins, (27) 775.
- histology, (26) 876; (29) 676.
- histology, pathologic, (36) 674.
- home economics, (26) 394, 597; (28) 461, 566, 795; (29) 162, 266, 496; (30) 763; (31) 495, 760; (32) 65, 394, 495; (33) 495, 598; (34) 293, 794; (36) 497; (37) 396; (40) 296, 899.
- home economics—
 - and school lunches, (36) 598.
 - instruction in France, (34) 899.
 - teaching equipment, (36) 396.
- home grounds, (34) 238; (37) 44, 346.
- honey chemistry, (29) 109.
- horse diseases, (30) 285; (34) 477, 794; (37) 784; (39) 85, 190, 492.
- horses, (26) 269, 369, 571, 668, 770, 875; (27) 471, 772, 875; (28) 269; (29) 573; (30) 174; (31) 169, 269, 470; (34) 268, 668, 794, 869; (37) 770; (38) 274.
- horses—
 - Belgian draft, (26) 76; (27) 72.
 - breaking and training, (32) 263.
 - dissection of, (33) 87.
 - Percheron, (37) 771.
 - trotters and pacers, (33) 571.
 - v. motor power for farm and transportation, (29) 388.
- horseshoeing, (27) 476; (29) 292, 682; (31) 488, 887; (32) 185; (36) 182.
- horticulture, (27) 644; (29) 193; (31) 532; (32) 436; (33) 899; (36) 137.
- horticulture, elementary, (40) 795.
- horticulture in America, (39) 541.
- horticulture, tropical, (30) 532.
- hotbeds and cold frames, (35) 445.
- house flies, (28) 560; (29) 656; (33) 561; (34) 855; (35) 57.
- house plants, (37) 346.
- house plants and flowers, (26) 744.
- house sanitation, (28) 566.
- household—
 - accounting, (40) 659.
 - chemistry, (40) 493.
 - finance, (40) 796.
 - insects, (32) 449.
 - mechanics, (36) 891.
 - thrift, (40) 96.
 - wastes, disposal, (34) 790.
- housekeeping, (27) 96; (28) 599, 763.
- housekeeping conditions among "Pennsylvania Germans," (34) 257.
- housing and town planning, (31) 293.
- housing in rural districts, (33) 893.
- hunger control in health and disease, (36) 363.
- hydraulics, (27) 385; (28) 288, 588; (31) 537; (35) 786; (37) 584.
- hydroelectric power, (36) 783; (37) 287.
- hydrogen ion concentration, (32) 801.
- hydrogenation of oils, (32) 416.
- hygiene, (26) 65, 386; (28) 78, 461; (30) 63, 763; (40) 694, 866, 899.
- hygiene and sanitation, military, (34) 369.
- Hymenoptera, (26) 352.
- ice cream, (33) 65.
- ice cream and ices, (34) 860.
- ice cream manufacture, (38) 281.
- Ichneumonidae of Great Britain, (34) 657.
- ichneumons of Great Britain, (27) 359.
- illumination, dark ground, (26) 82.
- immune serums, (26) 579.
- immunity, (26) 481, 676; (27) 76; (32) 578; (35) 73.

Books on—Continued.

- immunology, (34) 275; (37) 76.
- incubation and brooding, (29) 373.
- incubation periods of birds, (37) 774.
- Indian chutneys, pickles, and preserves, (32) 560.
- infant feeding, (40) 560.
- infant feeding and metabolism, (34) 460.
- infection—
 - and immunity, (30) 878; (35) 573; (38) 482, 781.
 - and resistance, (32) 270; (39) 679.
 - immunity, and specific therapy, (33) 476.
- insect pests, (39) 255.
- insect pests of orchards, (33) 856.
- insect wings, (40) 351.
- insecticides, (31) 517.
- insecticides, fungicides, and weed killers, (29) 341.
- insects, (26) 552, 752; (27) 452, 551; (28) 553, 745; (31) 155; (33) 153, 495, 745; (34) 651; (38) 256, 761; (40) 255, 351, 647, 795.
- insects—
 - forest, (27) 554.
 - habits and instincts of, (32) 846.
 - harmful and beneficial to man, (33) 856.
 - in relation to disease, (26) 658; (30) 455.
 - injuriously, (36) 355; (37) 395.
 - injuriously in Great Britain, (36) 853.
 - injuriously in Italy, (35) 460.
 - injuriously to fruit, (31) 849.
 - injuriously to grapes, (33) 652.
 - injuriously to man, (37) 156, 760.
 - injuriously to man in war, (34) 251.
 - instinct, (29) 52; (40) 255.
 - knowing through stories, (40) 795.
 - of California, (28) 853; (33) 553, 652.
 - central Europe, (35) 254.
 - Costa Rica, (38) 358.
 - Great Britain, (38) 557.
 - North America, (33) 652.
 - South India, (34) 549.
 - Uganda, (39) 656.
 - Victoria, (26) 147.
 - psychic life, (40) 647.
- internal secretions, (26) 264.
- irises, (26) 841; (28) 743.
- irrigation, (27) 686; (29) 181, 289, 683; (32) 784; (33) 389, 585, 884; (35) 185, 491, 794; (37) 185, 587, 882.
- irrigation—
 - and settlement in America, (34) 482.
 - and water rights law, (31) 586.
 - by pumping, (28) 889.
 - engineering, (30) 587, 689; (38) 589.
 - farming, (30) 587.
 - in United States, (34) 784; (38) 389.
 - law, (35) 185.
 - practice and engineering, (34) 481, 482.
 - works, (26) 787.
- John's disease, (32) 273.
- Johnson, S. W., (30) 94.
- kitchens, (40) 361.
- kola trees and nuts, (26) 139.
- kosher cooking, (39) 472.
- laboratory methods of the Army, (39) 786.
- lactose, industrial manufacture, (40) 415.
- Lamellicornia of British India, (40) 63.
- lameness in horses, (36) 280.
- land—
 - clearing and grubbing, (38) 490.
 - grants in United States, (34) 594.
 - leasing in Belgium, (33) 92.
 - ownership, (31) 490.
 - ownership, tenure, and taxation, (32) 891.
 - problem in Great Britain, (36) 392.
 - reclamation, (37) 214.
 - registration, Torrens system, (34) 489.
 - settlement for soldiers, (39) 648.
 - surveying, (34) 485.
 - system of Great Britain, (37) 697.
 - tenure in England, (28) 189; (29) 895.
 - title registration, (29) 895; (39) 89.
 - values in France, (40) 892.
- landscape architecture, (38) 542; (39) 546.
- landscape gardening, (34) 45, 439; (35) 746; (37) 546, 547.
- law for farmers, (26) 93.
- lawns, (27) 41.
- leather chemistry, (40) 714.
- leavening agents, (33) 66.

Books on—Continued.

- Leghorns, (28) 774.
- Leguminosae, (31) 523.
- leguminous plants, (32) 432.
- leishmanioses, (39) 683.
- Lepidoptera, collecting and preserving, (39) 560.
- Lepidoptera of North America, (37) 563.
- lepidopterology, (26) 348, 455; (28) 453; (35) 358, levees, (32) 187.
- Liebig, J. von, (32) 109.
- lighting, (31) 387.
- lilies, (26) 47; (29) 341.
- linseed oil, (39) 411.
- lipins, (39) 202.
- lipoids, (26) 802.
- little towns, (40) 892.
- livestock, (34) 565, 866; (39) 90, 268.
- livestock—
 - breeding, (29) 68.
 - diseases, (34) 278, 383; (38) 287, 781.
 - feeding, (33) 664, 696.
 - German breeds, (33) 668.
 - hygiene and diseases of, (33) 876.
 - industry in Hungary, (27) 672.
 - judging, (32) 668; (33) 71, 870; (37) 94.
 - management, (40) 176, 177.
 - on the farm, (37) 769.
 - remedies, (37) 876.
 - types and market classes, (37) 194.
- locusts, control in various countries, (37) 848.
- lumber—
 - and its uses, (31) 840.
 - industry in United States, (35) 649.
 - kiln drying, (38) 46.
 - measurement, (29) 240.
- lunch rooms, (26) 564.
- lure of the land, (33) 91.
- lymphatic glands in meat-producing animals, (34) 876.
- machine design, (31) 290.
- magnesium metabolism, (28) 569.
- malaria, (29) 759; (33) 155.
- Malta fever, (36) 382.
- mammals of—
 - America, (38) 652.
 - eastern Massachusetts, (33) 152.
 - Great Britain, (27) 51; (34) 57; (35) 656.
 - North America and adjacent seas, (37) 658.
 - western Europe, (30) 850.
- man as a machine, (31) 662.
- manure, (29) 820; (30) 24, 125; (36) 119; (37) 215.
- manure and fertilizers, (28) 538.
- manuring, (39) 724.
- manuring of flowers and ornamental plants, (30) 445.
- manuring of fruits and grapes, (30) 443.
- market gardening, (39) 843.
- marketing, (34) 595, 893; (39) 797.
- marketing—
 - and farm credits, (37) 391.
 - and housework, (39) 195.
 - cooperative, (38) 595.
 - farm products, (40) 792.
- markets and rural economics, (31) 894.
- mason bees, (32) 758.
- mastitis of the cow, (39) 890.
- mathematics, agricultural, (40) 796.
- mathematics, vocational, (37) 598.
- meadows and pastures, (26) 830.
- meadows, culture, (32) 38.
- meat—
 - and food inspectors' examinations in England, (33) 261.
 - curing and sausage making, (36) 114.
 - frozen, (27) 571.
 - hygiene, (35) 678, 879.
 - inspection, (28) 482; (32) 777, 778; (37) 77; (40) 577.
 - price of in Paris, (30) 256.
 - products, (30) 711.
 - purchasing and use, (32) 354.
 - supply of Germany, (30) 256.
- mechanical cultivation in Germany, (30) 191.
- mechanical engineering, (31) 287.
- mechanistic conception of life, (28) 875.
- medicine, (40) 577.
- medicines, patent and proprietary, (40) 182.
- Mendelism, (38) 367.
- metabolism and energy of men, (32) 663.

Books on—Continued.

- metabolism, chemistry of, (35) 765.
- meteorology, (27) 11 5; (29) 615; (32) 24; (34) 13; (35) 808; (36) 509.
- meteorology and weather forecasting, (26) 513.
- meteorology of Brazil, (37) 619.
- methyl alcohol, (28) 511.
- microbes and toxins, (26) 373.
- microbiology, (26) 372; (27) 223, 575; (31) 177; (35) 593; (37) 76.
- microbiology of infectious diseases of animals, (32) 474.
- microchemistry, (29) 801.
- microchemistry of plants, (30) 310.
- microorganisms, (30) 133, 379.
- microorganisms—
 - and fermentation, (27) 204.
 - pathogenic, (26) 677; (32) 78; (38) 480.
- microscopical technique, (26) 82.
- microscopy of vegetable foods, (35) 503.
- mildews, rusts, and smuts of Great Britain, (30) 745.
- milk, (26) 171, 779; (31) 468; (32) 660.
- milk—
 - analysis, (32) 312.
 - and cream testing and grading, (26) 578.
 - and dairy products examination, (26) 111.
 - and its hygienic relations, (37) 174.
 - and its products, (28) 176, 276, 373, 473, 674; (34) 380, 611.
 - and its products in the home, (33) 899.
 - chemistry, (31) 413.
 - condensed, and milk powder, (31) 375; (40) 283.
 - desiccated, (29) 777.
 - examination, (40) 376.
 - hygiene, (29) 877; (30) 276; (31) 676; (38) 280.
 - laboratory guide, (34) 571.
 - pasteurization, (36) 274.
 - production cost accounts, (36) 271.
 - products, (37) 777.
 - supply, (26) 478.
 - supply of cities, (37) 174, 874.
 - supply of Massachusetts, (37) 372.
 - supply of Paris, (36) 572.
 - testing, (29) 206; (33) 298.
- milling and baking, (35) 859; (40) 863.
- mimicry, (31) 57.
- mimicry in butterflies, (35) 55.
- mineral deposits, (30) 719.
- molds, bacteria, and yeasts, (27) 727.
- moor culture, (27) 638; (31) 620.
- moorland pastures and meadows, (31) 830.
- moose and elk, (38) 53.
- mosquito control, (39) 867.
- mosquito control in Panama, (35) 855.
- mosquitoes, (26) 251; (28) 455.
- mosquitoes, anopheline, of India, (26) 349.
- mosquitoes of North America and West Indies, (29) 357; (34) 453; (37) 702.
- motor cultivation, (31) 488.
- motors and dynamos, (29) 892.
- mules, (31) 470.
- mushrooms, (34) 532, 761.
- mushrooms of Minnesota, (27) 528.
- mutation in living beings, (26) 472.
- mutation in plants, (34) 629.
- mycology and plant pathology, (38) 147.
- mycology of water supplies and sewage, (30) 418.
- mycoses, (27) 882.
- myriapods, (30) 256.
- natural history of the farm, (32) 493.
- natural science technique, (32) 625.
- natural selection, (31) 865.
- nature sketches in temperate America, (26) 346.
- nature study, (26) 297, 298; (28) 298, 897; (29) 495; (33) 95, 397; (34) 599; (38) 196; (40) 898.
- Nematocera of British India, (29) 57.
- nitrogen—
 - atmospheric, fixation, (29) 417; (31) 822.
 - atmospheric, synthetic fixation, (32) 217.
 - atmospheric, utilization, (30) 26.
 - metabolism of bacteria, (39) 110.
- nucleic acids, (32) 201.
- nutrition, (26) 658; (28) 567, 569; (29) 266; (31) 262, 263; (33) 662; (34) 658; (35) 268; (38) 468, 661; (40) 554.
- nutrition and clinical dietetics, (39) 567.
- nutrition and diet, (30) 463.
- nutrition of farm animals, (38) 268.

Books on—Continued.

- nutritional physiology, (40) 463.
- oil analysis, (39) 207.
- oil and fat analysis, (29) 811.
- oil seeds and feeding cakes, (34) 565.
- oils and fats, (39) 411, 504.
- oils and fats, hydrocarbon, (30) 313.
- oils, fats, and waxes, (34) 507; (39) 8; (40) 804.
- oils, volatile, (30) 310, 710.
- oleomargarine, (31) 176.
- olive diseases, (39) 457.
- onion culture, (33) 837.
- ophthalmology, (27) 284; (29) 377.
- orange culture, (37) 835.
- orchard renovation, (27) 241.
- orcharding, (32) 394.
- orcharding on rough lands, (26) 440.
- orchids, (27) 41; (34) 741.
- organic compounds, (34) 312.
- orientation in ants, etc., (33) 563.
- osier culture, (30) 347.
- osiers and willows, (31) 49.
- osmotic pressure, (30) 310; (40) 801.
- ostrich breeding, (26) 772.
- ostriches, (30) 472, 874.
- outdoor work, (26) 258.
- palms, (28) 542.
- paper technology, (26) 316.
- parasitic amebae in man, (26) 375.
- parasitology, (26) 174; (30) 536, 654; (31) 177.
- parasitology—
 - of domestic animals, (26) 882.
 - of man and domestic animals, (32) 777.
- parks, (36) 743.
- partridges, (27) 774.
- pastures, Alpine, (26) 130.
- pathological technique, (26) 276; (40) 676.
- pathology, (27) 576; (28) 178; (29) 174; (31) 276.
- pathology and anatomy of man and animals, (32) 270; (33) 476.
- pathology, special, (36) 378.
- pavement specifications, (29) 387.
- pavements and paving materials, (31) 385.
- peach culture in North America, (30) 42.
- peach growing, (40) 149.
- peaches of New York, (38) 42.
- peat and peat moors, (34) 618.
- peat litter, (34) 624.
- peat moors and water powers with reference to air nitrogen, (32) 820.
- pellagra, (36) 763.
- Penicillium, (31) 327.
- peonies, (37) 145.
- perennials, (27) 645.
- perennials and herbaceous borders, (29) 840.
- perennials, hardy, (35) 345.
- pets, (28) 173; (38) 776.
- pharmacognostic tables, (32) 79.
- pharmacology for veterinarians, (29) 580.
- pheasants, (35) 275.
- phosphates, (33) 126.
- phosphates, inorganic, of soils, (27) 21.
- phototropism of plants, (39) 223.
- Phylloxerinae, (27) 859.
- physical-chemical tables, (29) 107, 201.
- physics of household, (33) 364.
- physiology, (26) 659; (34) 777.
- physiology—
 - and metabolism of growth, (26) 658.
 - chemical, (37) 501.
 - comparative, (33) 168.
 - human, (29) 767.
 - nutritional, (28) 763.
 - of invertebrates, (31) 154.
- phytopathology, (39) 352.
- picotees, carnations, and pinks, (26) 139.
- pig clubs, (40) 96.
- pig diseases, (32) 83, 277, 378; (40) 88, 783.
- pigeons, (30) 696; (31) 76; (32) 265; (33) 173.
- pigs, (26) 668; (27) 470; (28) 769; (29) 872; (30) 871; (31) 470, 769; (32) 262; (33) 172, 791; (34) 268; (37) 769.
- pigs, large white English, (36) 371.
- pine-barren vegetation in New Jersey, (36) 539.
- pine, yellow, (31) 444.
- pinks, (32) 440.
- Pinus, (31) 743.
- Plant—
 - alkaloids, (29) 503; (31) 409.
 - anatomy, (33) 724.

Books on—Continued.

plant—continued.

- anatomy, physiological, (31) 728; (36) 46.
- and animal life, (28) 897.
- bases, (31) 10.
- breeding, (26) 43, 325; (28) 736; (31) 131; (32) 220, 425, 430, 822.
- breeding in Scandinavia, (29) 636.
- classification, (29) 216.
- culture, (28) 235; (35) 499.
- diseases, (26) 51, 142, 242; (27) 746; (28) 345, 745; (29) 150, 546, 644; (30) 240, 347, 745; (31) 241, 539, 745; (33) 646; (34) 49, 794; (36) 540, 645; (39) 148; (40) 47.
- diseases and injuries, tropical, (32) 340.
- diseases and pests, (35) 835; (36) 236.
- distribution by ocean currents, (38) 125.
- exploitation, (40) 524.
- galls, (26) 658; (30) 852.
- genetics, (40) 817.
- plant growth—
 - and soil conditions, (34) 321.
 - and soils, (39) 512.
 - as affected by smelter fumes, (28) 623.
- plant—
 - histology, (34) 727.
 - kingdom raw materials, (36) 628.
 - life, (31) 32; (35) 128.
 - life and evolution, (26) 528.
 - microchemistry, (32) 308.
 - names, (38) 125.
 - nutrition, (34) 135, 326.
 - nutrition and manuring, (36) 114.
 - parasites, (31) 539.
 - pathology, (36) 645.
 - physiology, (27) 219; (31) 323; (32) 520; (33) 425; (36) 429; (37) 220; (38) 728.
 - poisons and stimulants, inorganic, (33) 327.
 - propagation, (35) 642; (38) 539.
 - propagation and breeding, (37) 795.
 - propagation and pruning, (30) 236.
 - stimulation, (27) 331.
 - succession, (37) 434.
 - teratology, (36) 430.
- plantains, (26) 47.
- plants, (29) 420.
- plants—
 - alimentary and medicinal, (34) 533.
 - aromatic, (33) 643.
 - biology of, (30) 429.
 - climbing, (34) 741.
 - colonial, (33) 437; (36) 142.
 - cultivated of East Indies, (30) 697.
 - economic, of Dutch East Indies, (30) 521.
 - economic, of New Caledonia, (30) 445.
 - herbaceous, (27) 346.
 - house, (34) 238, 836; (35) 450.
 - in health and disease, (36) 628.
 - irritability of, (30) 429.
 - of Connecticut Valley in Massachusetts, (29) 216.
 - ornamental, (37) 746.
 - ornamental, of central Europe, (30) 742.
 - poisonous, (26) 327.
 - poisonous to livestock in Great Britain, (37) 688.
 - tropical, (33) 221.
 - tropical and subtropical, (31) 235.
 - useful, (33) 96.
- plumbing, (35) 690.
- plumbing, country practice in, (33) 590.
- poisons, (26) 373.
- pollination by insects, (40) 655.
- ponies, (31) 470.
- ponies, Welsh, (31) 170.
- population, Malthusian theory, (34) 594.
- potash industry, (26) 316.
- potato culture, (40) 36, 439, 828.
- potato diseases of Australia, (30) 48.
- potatoes, (28) 738; (33) 531; (37) 533, 543, 645; (38) 235.
- poultry, (26) 270, 473, 669; (27) 72, 73, 572, 674; (28) 270, 470, 673; (29) 69, 193, 371, 573; (30) 270, 572, 696; (31) 270, 474, 568; (32) 173, 570; (33) 77, 173, 473, 598; (34) 269, 377, 470; (36) 597; (37) 769, 775; (40) 177, 280, 693.
- poultry—
 - breeding and management, (36) 668.
 - diseases, (30) 687; (33) 681; (34) 280, 481, 881; (35) 284, 379; (39) 393.

Books on—Continued.

poultry—continued.

- feeds and feeding, (28) 769.
- for fighting and pit purposes, (30) 175.
- houses, (27) 793; (29) 689; (31) 88, 893.
- houses and appliances, (26) 188, 591; (38) 190.
- keeping, (35) 93.
- poult for the farm, (29) 688.
- preservation of fruits and legumes, (29) 116.
- preserving and canning, (39) 317, 716, 808.
- preserving and pickling, (39) 614.
- preventive medicine and hygiene, (38) 882.
- protein—
 - anaphylaxis, (32) 79.
 - and humin substances, (34) 708.
 - chemistry, (29) 408.
 - in the diet, (28) 567.
 - metabolism, (28) 167.
 - split products in relation to immunity and disease, (30) 379.
- proteins, (26) 801; (27) 803; (31) 607; (39) 801.
- proteins, physical chemistry, (38) 708.
- protozoa, (29) 360.
- protozoa, pathogenic, (26) 246, 865; (27) 460, 551; (36) 177.
- protozoology, (26) 882; (27) 356.
- pruning, (33) 838; (37) 41, 344; (38) 539.
- public health, (31) 387.
- public health legislation in United States, (34) 661.
- pumps and suction dredgers, (37) 585.
- pumps, centrifugal, (34) 482.
- rabbies, (31) 370, 770; (33) 174; (37) 775; (38) 174.
- rabbies and caviars, (38) 577.
- rabbies, (29) 679; (37) 480.
- radioactivity of soils and waters, (33) 809.
- rainfall, reservoirs, and water supply, (31) 511.
- rats, (40) 546.
- raw materials of plant kingdom, (39) 430.
- reagents and reactions, (39) 803.
- reconstruction in France, (39) 689, 892.
- refrigeration, (28) 385.
- remedies, new and nonofficial, (40) 284.
- restraint of domestic animals, (26) 678.
- rhododendrons, (38) 542.
- rhododendrons and azaleas, (26) 337.
- rhubarb culture, (34) 232.
- rice, (31) 834.
- river discharge, (29) 487; (33) 287; (37) 484.
- river regulation, (34) 885.
- road and bridge specifications, (29) 487.
- road construction, (26) 393, 789; (31) 685; (37) 590; (38) 592.
- road transportation problems, (31) 90.
- roads, (27) 492; (28) 84, 382, 486; (29) 388; (33) 393; (35) 583.
- roads—
 - and pavements, (31) 90; (36) 285.
 - earth, (32) 85.
 - forest, (31) 185.
 - paths, and bridges, (27) 687.
 - rock gardens, (26) 139; (31) 536, 743.
- rockeries, (39) 245.
- root crops, (37) 645.
- roots of herbaceous plants, (36) 223.
- rose culture, (32) 339; (33) 644.
- roses, (26) 337, 842; (27) 146, 242; (28) 238, 841; (31) 143, 536; (34) 45; (35) 345, 647; (36) 242; (37) 145, 836; (38) 44; (39) 244; (40) 342.
- rotation of crops, (29) 139.
- Rothamsted experiments, (40) 514.
- Rothamsted memoirs on agricultural science, (32) 120.
- rubber, (26) 50, 339; (27) 542, 647; (28) 246; (29) 644; (30) 146, 313, 347, 646, 741; (31) 143, 144; (32) 339; (33) 50, 343; (40) 46.
- rubber—
 - and resin yielding plants, (34) 838.
 - industry, (37) 347.
 - industry in Bolivia, (27) 148.
 - industry of the Amazon, (35) 544.
- rural—
 - and urban population of United States, (30) 893.
 - church, (40) 390, 486.
 - communities, (28) 687.
 - community cooperation, (29) 294.
 - credit, (40) 892.
 - Denmark and its schools, (34) 196.

Books on—Continued.

rural—continued.

- development, (28) 790.
- development in Burma, (31) 391.
- economics, (26) 92; (28) 91, 594; (29) 894; (35) 88; (36) 390; (38) 196.
- education, (34) 292.
- housing, (34) 895.
- hygiene, (31) 93.
- improvement, (32) 388.
- life, (27) 898; (40) 292, 485, 687, 889.
- life and education, (31) 193.
- life and labor in Great Britain, (26) 489.
- life conveniences and enjoyments, (27) 690.
- life in Canada, (30) 491.
- life in United Kingdom, (30) 491, 791.
- problems, (32) 891; (39) 192, 794.
- problems in England and Wales, (31) 295.
- problems in New York, (30) 491.
- reconstruction in Ireland, (40) 91.
- sanitation in the Tropics, (37) 86.
- sociology, (28) 595; (34) 790; (38) 89.
- surveys, (33) 593.
- welfare, (29) 190.

salads, sandwiches, and chafing-dish dainties, (32) 560.

- salt and alkali industry, (36) 428.
- salts, crystallizable, photomicrographs, (36) 804.
- sand dunes, spits, and wastes, (32) 30.
- sanitation, (31) 387.
- saxifrages or rockfoils, (34) 45.
- scale insects, (28) 556.

school—

- and home gardening, (39) 497.
- credit for home work, (33) 597.
- feeding, (29) 162.
- gardening, (29) 598, 792; (30) 496, 598; (31) 395; (35) 594; (36) 693; (39) 498; (40) 296.
- hygiene, (30) 790.
- lunches, (36) 562.
- schools, rural, (28) 692; (29) 494; (30) 392; (32) 391.
- science, elementary, (26) 296; (39) 597.
- seaside planting, (40) 447.
- seeds and fruits, (27) 729.
- seeds, impurities of, (31) 835.
- sericulture in Madagascar, (39) 560.
- serodiagnosis, (30) 276.
- serum study, (35) 73.
- serum therapy, (31) 177.
- serum therapy and diagnosis, (26) 578.
- serums, immune, (38) 378.
- serums, vaccines, and toxins, (36) 575.

sewage—

- analysis, (33) 206.
- disposal, (27) 212, 213.
- disposal for farms, (28) 789.
- disposal plants, (33) 785.
- sludge, (26) 717.
- sewerage, (34) 886.
- sex evolution in plants, (32) 725.
- sheep, (27) 673; (28) 467, 769, 770; (30) 795; (31) 470, 768.

sheep

- and wool, (32) 365.
- diseases, (36) 182.
- farming in America, (26) 769.
- farming in British Isles, (37) 770.
- farming in North America, (30) 173.
- farming on western ranges, (29) 666.
- industry in Australasia, (32) 261.
- industry in Australia, (27) 470.
- management, (26) 570; (35) 772.
- shellfish industry, (27) 472.
- Shetland ponies, (30) 270.
- shrubs, (26) 140, 642; (27) 346; (28) 342; (29) 842; (34) 345.
- shrubs and trees, ornamental, (37) 44.
- shrubs of Florida, (30) 445.
- silage, (32) 567.
- silos, (26) 790; (30) 389, 670.
- silos and silage, (29) 87.
- silos, concrete, (31) 892; (33) 892; (35) 294.
- silviculture, (28) 343; (31) 143; (35) 346.
- silvonomy, (33) 541.
- skim milk, (27) 75.
- skunk culture, (34) 269.
- slaughterhouses, (31) 166.
- smithing and forging, (36) 287.
- smoke, (27) 212.
- smut fungi, (27) 746.

Books on—Continued.

social centers in the Southwest, (27) 796.

soil—

- bacteriology, (27) 728; (28) 34; (33) 791; (36) 692.
- chemistry, (30) 512.
- colloids, (34) 515.
- fertility, (30) 517.
- fertility and fertilizers, (26) 521; (28) 423.
- improvement, (28) 632.
- management, (40) 396.
- organisms, (30) 323.
- physics, (28) 493; (34) 293.
- physics and management, (38) 598.
- solution, (26) 122.
- soils, (26) 215; (28) 619, 622, 794; (29) 193, 315; (31) 118, 719; (32) 215; (33) 95, 398, 617; (34) 321, 716, 793; (35) 214, 421; (36) 114.
- soils—
 - and crops, (30) 695.
 - and fertilizers, (38) 196.
 - and plant growth, (39) 512.
 - forest, (26) 338.
 - mineralogical analysis, (35) 16.
 - of California, (30) 420.
 - of Iceland, (30) 119.
- solutions, (31) 309.
- solvents, oils, gums, waxes, etc., (30) 310.
- sorghum, grain, (31) 834.
- soy bean casein, (40) 415.
- soy beans, (27) 435.
- species, origin of, (30) 432.
- spices, (26) 242; (34) 166.
- spiders, (28) 257.
- spore plants, (33) 429.
- sporotrichoses, (31) 81.
- spraying, (38) 40; (39) 140.
- springs and ground water, (29) 15.
- spruce, growth and yield in high mountains, (34) 347.
- squabs, (30) 175; (33) 173; (37) 775; (40) 280.
- starch manufacture, (27) 15.
- starch sugar, (32) 109.
- starches, differentiation and specificity, (31) 804.
- steppes of Spain, (39) 122.
- sterility in cows, (38) 286.
- strawberries, (27) 40, 242; (28) 840; (37) 42, 648.
- strength of materials, (29) 890.
- sugar, (27) 413, 615; (31) 804.
- sugar—
 - analysis, (30) 315; (31) 315.
 - beet industry in Europe, (29) 142.
 - beet seed, (40) 441.
 - beets, (26) 737; (32) 436; (37) 533.
 - cane, botany of, (40) 532.
 - industry, chemistry of, (33) 615.
 - manufacture, (29) 113, 312; (34) 508; (37) 114; (38) 508.
 - production, (29) 233; (39) 538.
 - situation, (40) 533.
 - technology, (35) 114, 807.
- swamp lands, (29) 890.
- sweet clover, (29) 833.
- sweet corn, (34) 41.
- sweet peas, (26) 47, 139; (30) 534; (32) 339; (34) 238; (36) 643; (37) 346, 546.
- sweet potatoes, (32) 41; (35) 232.
- tables for statisticians and biometricians, (32) 362.
- tanning, (33) 18.
- tannins, (30) 311.
- tea, (36) 241; (38) 347.
- tea culture, (39) 449.
- tea industry in various countries, (30) 238.
- terminology of animal and plant structure, (29) 665.
- textiles, (30) 598.
- therapeutic agents, (31) 478.
- therapeutics for veterinarians, (32) 79.
- timber, (34) 537.
- timber—
 - laws in United States, (36) 644.
 - of Great Britain, (36) 746.
 - preservation, (33) 243.
 - tables, Biltmore, (28) 644.
- titrations, alkalmetric and acidimetric, (33) 109.
- toadstools and mushrooms, (31) 628.
- tobacco, (33) 235; (36) 142; (40) 442.
- tomatoes, (34) 737.

Books on—Continued.

- tomatoes and salad plants, (37) 645.
- Torrens system of land registration, (37) 492.
- torrents of Savoy, (35) 346.
- toxicology, (27) 679.
- traction farming and engineering, (30) 89.
- traction plowing, (26) 89.
- tractors, (38) 390.
- tractors, gas, (31) 590.
- traders, farmers, and agricultural organization, (28) 292.
- transpiration and sap ascent in plants, (33) 127.
- tree—
 - diseases, (40) 53.
 - surgery, (30) 236.
 - wounds and diseases, (36) 544.
- trees, (26) 140, 642; (27) 346; (28) 642; (29) 842; (30) 196, 645, 843; (31) 444, 494; (33) 297; (36) 794; (39) 144, 647.
- trees and shrubs, (30) 445.
- trees and shrubs—
 - deciduous, of central Europe, (30) 742.
 - of Minnesota, (28) 145.
 - the British Isles, (32) 337.
 - United States, (33) 437.
- trees—
 - of America, (29) 441.
 - California, (31) 837.
 - eastern United States and Canada, (27) 442.
 - Florida, (30) 45.
 - Great Britain, (27) 646.
 - Great Britain and Ireland, (28) 145; (29) 747.
 - Hawaii, (29) 643.
 - Java, (30) 446.
 - North Carolina, (36) 645.
 - northeastern America, (28) 342.
 - Pennsylvania, (33) 49.
 - United States, (37) 346.
 - ornamental, of Hawaii, (37) 546.
 - shrubs, and bushes of Europe, (31) 143.
 - timber, of United States, (27) 147.
- Trombididae, (27) 565.
- tropical diseases, (32) 177.
- tropical medicine and hygiene, (35) 379.
- truck crop diseases, (39) 354.
- truck crops, (30) 639.
- truck gardening in Florida, (26) 237; (30) 442.
- trypanosome diseases, (29) 77.
- tuberculin in diagnosis and treatment, (30) 284, 382.
- tuberculosis, (28) 883; (30) 82; (38) 286; (39) 890.
- tuberculosis, immunization, (36) 182.
- tulips, (31) 43.
- tumors, (31) 280.
- turf for golf courses, (37) 146.
- turkeys, (31) 271.
- twins, (38) 574.
- ultramicroscopy, (26) 82.
- urine and other excretions of man and animals, (26) 480.
- vaccination, serum-therapy, and immunity, (27) 76.
- vacuum cleaning systems, (32) 89.
- variations in plants and animals, (26) 227.
- vegetable—
 - gardening and canning, (38) 94.
 - growing on muck land, (36) 236.
 - oils and fats, (28) 611.
- vegetables, (27) 144; (28) 435, 538, 740; (38) 343.
- vegetables of California, (29) 435.
- vegetation, British, (27) 328.
- vertebrates, (27) 452.
- vertebrates, comparative anatomy, (40) 777.
- vetch, (30) 737.
- veterinary—
 - bacteriology, (26) 276.
 - dissection, (26) 373; (34) 480.
 - law, (35) 278.
 - medicine, (26) 480, 578, 882; (27) 180, 576; (28) 78; (29) 476; (31) 376; (32) 79, 578, 676; (35) 73, 278, 379; (37) 76, 176, 778.
 - obstetrics, (32) 777; (38) 78.
 - pathology, (34) 477.
 - pharmacology and therapeutics, (38) 580.
 - physiology, (27) 679.
 - posology and therapeutics, (34) 777.
 - post-mortem technique, (39) 582.
 - surgery, (27) 377, 475.

Books on—Continued.

- veterinary—continued.
 - surgery and obstetrics, (27) 881; (28) 583.
 - surgical operations, (38) 781.
 - therapeutics, (30) 379; (36) 675.
 - toxicology, (28) 880.
- vinegar, (28) 511; (37) 112.
- vinegar manufacture, (33) 18.
- vines, (26) 139; (27) 346.
- violets, (29) 149, 543.
- vitamins, (32) 578.
- viticulture, (30) 643; (37) 834.
- viticulture and enology, (35) 744.
- vocational education, (40) 196.
- wage earners, standard of living, (31) 360.
- war food, (37) 715.
- wasps, (40) 553.
- wasps, hunting, (35) 468.
- waste products, utilization, (40) 415.
- water, (28) 27, 514.
- water—
 - analysis, (26) 418; (29) 506; (30) 12; (31) 785; (32) 807; (33) 206; (38) 313.
 - bacteriological examination, (38) 11.
 - conservation, (31) 214.
 - conservation by storage, (33) 885.
 - examination, (34) 609.
 - flow in pipes, channels, etc., (36) 783.
 - flow of, (35) 490.
 - ground, and wells, (30) 620.
 - hygiene, (36) 586.
 - irrigation, (34) 481, 482.
 - microscopy, (32) 205.
 - power engineering, (35) 786.
 - purification, (26) 28.
 - purification and sewage disposal, (30) 511.
 - purification plants, (34) 390.
 - rights law, (31) 586, 587.
 - subterranean, (29) 15.
 - supplies, (31) 383, 512; (32) 87, 685; (33) 287, 586.
 - supplies, rural, (40) 785.
 - supply, (34) 83; (37) 187.
 - supply for farms, (28) 214, 893.
 - supply for villages, (38) 488.
 - transpiration, (33) 390, 586.
- waterworks, (36) 87.
- wattles of Australia, (36) 844.
- weather, (27) 212, 509; (31) 19; (34) 413.
- weather—
 - and climate of Chicago, (32) 211.
 - forecasting, (26) 809; (29) 615.
 - wisdom in agriculture, (26) 513.
- weeds, (32) 232.
- weeds of Indiana, (29) 144.
- weevils of northeastern America, (36) 157.
- wheat, (32) 42; (34) 293.
- wheat—
 - and its products, (38) 538.
 - crop of India, (29) 789.
 - culture in America, (36) 134.
 - flour, and bread, prices, (40) 792.
 - Russian, (40) 831.
 - world's supply, (40) 244.
- wild flowers, (37) 630.
- wild life conservation, (32) 447.
- wine making in France, (34) 690.
- wine manufacture, (26) 512.
- wines, (26) 715.
- winter botany, (39) 628.
- women in relation to English agriculture, (35) 891.
- wood—
 - as building material, (35) 147.
 - preservation, (36) 844; (39) 292.
 - pulp, (26) 142.
 - seasoning, (38) 248.
 - waste utilization, (35) 148.
- woods—
 - American, (26) 442; (27) 42, 541; (30) 445.
 - of Pacific coast, (35) 649.
 - of Sao Paulo, (39) 351.
- woodworking, agricultural, (36) 693.
- woody plants, anatomy, (37) 821.
- wool, (26) 874; (31) 268; (37) 894.
- wool industry, (40) 875.
- wounds of animals, (40) 84.
- wounds, treatment, (34) 876; (38) 283.
- yams, (33) 437.
- yeast and alcoholic fermentation, (34) 711.

Books on—Continued.

- yeasts, bacteria, and molds, (27) 727.
- zebras, (28) 269.
- zebu cattle, (38) 69.
- zoological philosophy, (33) 552.
- zoology, (26) 163, 652; (30) 52, 248.
- zoology, economic, (33) 652; (38) 456.
- zootechny, (26) 873; (30) 170, 174.

Boophilus—

- annulatus, *see* Cattle tick.
- annulatus var. microphilus, in Australia, (30) 82.
- decoloratus, relation to anaplasmosis, (26) 585.

Borate buffer mixtures, hydrogen electrode potentials of, (35) 801.**Borax—**

- as food preservative, (30) 364.
- as growth stimulant for hemp, (33) 432.
- in fertilizers, effect on corn, (40) 322.
- larvicidal value, (34) 359.
- toxicity, (28) 661.
- use against fly larvae, (31) 654; (34) 160.

Bordeaux mixture—

- acid and alkaline, (38) 153, 154, 756; (39) 151, 548.
- adhesiveness, (27) 847.
- analyses, (27) 441; (31) 49, 142; (33) 47; (34) 436, 639; (37) 243; (39) 240.
- application to under side of grape leaves, (26) 450.
- as citrus spray, (33) 649.
- as spray for rubber trees, (35) 459.
- as sugar cane dip, (27) 448.
- as summer spray for apples, (33) 46.
- calculating values, (40) 45.
- chemistry and fungicidal action, (28) 552
- composition, (32) 544; (34) 540.
- copper content, (34) 748.
- decomposition, (35) 352.

Effect on—

- apples, (28) 47.
- leaf transpiration, (38) 126.
- plants, (32) 243.
- potatoes, (26) 53; (27) 151, 237, 738; (28) 433, 434; (31) 643, 825; (33) 40; (36) 147.
- sugar content of apples, (30) 647.
- transpiration, (39) 828.
- transpiration from abscised leaves and potted plants, (36) 454.
- factors affecting efficiency, (28) 537; (31) 50.
- fungicidal action, (30) 399; (32) 545.
- fungicidal value, (31) 439, 541; (33) 648; (34) 147; (35) 39; (37) 447; (38) 235, 454; (39) 348, 651; (40) 747.

homemade, tests, (33) 549.**inert and active ingredients of, (26) 658.****injuries to apples, (27) 440.****investigations, (33) 151.****methods of analysis, (32) 296.****mixing plant, description, (33) 358.****modified, for grape mildew, (28) 152.****neutral and alkaline, (40) 252.****notes, (35) 46.****physico-chemical studies, (31) 802; (32) 242.****physiological effects, (28) 247.****precipitation membranes, (27) 154.****preparation, (26) 539; (30) 153, 197; (32) 243; (39) 251, 548, 851; (40) 746, 748, 801.****preparation and analyses, (34) 711.****preparation and use, (26) 848; (27) 254; (33) 449, 639; (34) 643; (35) 646; (36) 16, 353; (39) 854; (40) 748, 750.****spraying celery with, (40) 155.****spraying v. dusting, (33) 336.****stains, removal, (35) 644.****studies, (36) 548.****tests, (27) 439, 440; (28) 48.****use, (32) 632.****use with lead arsenate, (38) 258.****v. lime-sulphur mixture for potatoes, (35) 831.****wetting capacity, (27) 753.****wetting power, increasing, (29) 850.****Bordorite mixture, fungicidal value, (40) 747.****Borecole, notes, (26) 835.****Borers—****flat-headed, notes, (28) 653; (36) 554; (37) 566.****injuries to timber, (29) 761.****of Java, (34) 656.****pin hole, studies, (31) 852.****rearing, (26) 59.****Boric acid—**

- antiseptic and germicidal value, (37) 176.
- as butter preservative, (28) 277.
- as fish preservative, (29) 659.
- as food preservative, (30) 364.
- as milk preservative, (32) 414.
- detection in cheese, (32) 313.
- detection in milk, (32) 414.
- determination, (33) 804.
- determination in foods, (32) 506.
- determination in presence of magnesium chloride, (29) 609.

effect on—

- butter and margarin, (26) 778.
- development of fungi, (28) 444.
- growth of plants, (31) 325.
- metabolism of *Aspergillus niger*, (30) 630.
- milk, (33) 577.
- sugar beets, (31) 233.
- fertilizing value, (27) 327, 628.
- in foods, (36) 466.
- in honey, (27) 410.
- insecticidal value, (34) 359.
- powdered, fertilizing value, (28) 735.
- solution, effect on potatoes, (27) 748.
- stimulation of radishes, (39) 730.

Boring machine for stumps, (31) 486.**Borna disease in horses, studies, (26) 786; (28) 783; (29) 587.****Bornetina corium, notes, (29) 752.****Borocera madagascariensis, studies, (27) 456.****Boron—**

- compounds, nitrogen fixation by, (29) 822; (32) 125.
- determination in organic matter, (32) 206; (33) 713.

effect on—

- crops and distribution, (39) 429.
- development of corn, (33) 522.
- plant growth, (29) 219; (31) 126; (32) 121; (34) 428, 625.
- wheat, (38) 22.
- wheat and barley, (36) 520.
- fertilizing value, (27) 128, 500; (28) 34.
- in animals, (28) 370; (30) 168.
- in milk and eggs, (30) 168.
- toxic effect on plants, (33) 327; (38) 629.

Bos—

- orthoceros, studies, (28) 467.
- primigenius, notes, (27) 371.
- primigenius, perfect skull, (27) 870.
- spp. hybrid, notes, (28) 68.
- taurus brachyceros, notes, (28) 767.
- taurus hybrids, fertility of, (26) 163.
- urus minutus n. sp., description, (26) 768.

Boscia spp., analyses and digestibility, (32) 167.**Boston Chamber of Commerce, floor rules, (26) 792****Bostra sp., notes, (28) 555.****Bostrichidae—****feeding habits, (26) 151.****notes, (26) 759.****Bostrychus—****gibbicollis, lead-boring, (39) 467.****monachus, notes, (29) 652.****Boswellia serrata—****gum-oleo-resin, (40) 248.****products, manufacture and composition, (35) 317.****tapping experiments, (29) 43.****Botanic—****gardens—****in the Tropics and Subtropics, (28) 820.****of British Guiana, (32) 236; (35) 643.****Saharanpur, report, (27) 537.****station—****and experiment plots, Montserrat, report (26) 534.****in Honduras, report, (33) 438.****Botanical—****activity in District of Columbia, (40) 726.****cross section of northern Mississippi, (29) 513.****features of African deserts, (30) 223.****features of Algerian Sahara, (29) 626.****geography, meteorological observations in (31) 614.****literature in Washington, D. C., libraries, catalogue, (26) 38.****research at Carnegie Institution, (27) 428; (30) 223; (32) 429; (33) 220; (36) 327; (37) 524, 630.**

Botany—

- agricultural, course in, (37) 795.
- American, unification, (40) 817.
- and phytopathology, relationship, (34) 48.
- bibliography, (26) 596, 629; (27) 31; (29) 327, 626; (30) 223.
- course for high schools, (28) 298.
- economic, investigations, (33) 741.
- elementary course in, (38) 795.
- in agricultural colleges, (32) 393.
- international catalogue, (35) 29; (37) 630.
- laboratory guide, (32) 520.
- lexicon, (32) 219.
- of Hawaii, (29) 239.
- of southern Patagonia, (34) 306.
- relation to scientific agriculture, (38) 697.
- taxonomic, of Washington, D. C., and vicinity, (37) 435.
- taxonomic, scope and relations, (35) 730.
- textbook, (26) 227, 596; (27) 328, 423; (30) 520; (31) 425; (36) 429; (38) 728; (39) 222; (40) 898.
- treatise, (28) 820; (30) 428; (33) 27; (37) 220, 818.
- tropical, guide, (28) 435.
- yearbook, (34) 494.
- Botflies—see also Horse and Sheep botflies.**
- in Argentina, notes, (27) 259.
- notes, (29) 454; (36) 456.
- paper on, (40) 259.
- relation to pernicious anemia in horses, (33) 681.
- studies, (38) 83; (40) 458, 858.
- Botfly, new, from reindeer, (30) 457.**
- Bothricephalus latus, life cycle, (38) 783.**
- Bothriocraera flavipes n.g. and n.sp., description, (35) 857.**
- Bothynoderes punctiventris, notes, (31) 654.**
- Botor tetragonoloba, notes, (36) 340.**
- Botryodiplodia—**
- chamaeropsis, studies, (31) 746.
- nonvalidity of genus, (34) 242.
- sp. on coconut, (38) 758.
- sp. on oaks, (34) 448.
- theobromae, notes, (31) 55; (34) 849; (36) 852; (37) 252, 253; (38) 52, 53, 759.
- Botryomycosis of the udder in mares, (31) 184.**
- Botryorhiza hippocrateae n.g. and n.sp., notes, (37) 552.**
- Botryosphaeria—**
- berengeriana—
- induced sporulation in, (36) 752.
- notes, (39) 459, 553.
- studies, (39) 850.
- treatment, (37) 652.
- fuliginosa—
- injurious to cotton, (26) 341.
- notes, (28) 648.
- marconii n.sp., description, (32) 146.
- minuscule n.sp., notes, (37) 148.
- ribis, treatment, (28) 748.
- Botrytis—**
- alli studies, (38) 450.
- anthophila n.sp., description, (30) 538; (36) 748.
- bassiana, notes, (27) 56; (28) 354; (32) 63.
- blight of goldenseal, (39) 853.
- cinerea—see also Grape gray rot.
- cultures, cytase in, (39) 247.
- notes, (40) 347, 847.
- on conifer seedlings, (40) 545.
- on peony, (40) 844.
- studies, (39) 854.
- detection in fruit tissue, (39) 248.
- effusa n.sp., notes, (26) 757.
- effusa n.sp., studies, (27) 456.
- on flowers, (37) 47.
- parasitica—
- introduction into United States, (36) 245.
- notes, (26) 851.
- on tulips, (39) 653, 858.
- treatment, (35) 51.
- relation to Sclerotinia fuckelliana, (39) 250.
- rileyi, description, (33) 459.
- sp. affecting dahlias, (30) 151.
- sp. affecting strawberries, (31) 645.
- sp., notes, (28) 552.
- sp. on crated strawberries, (35) 458.
- sp. on fig, (38) 454.
- sp. on geranium, (39) 857; (40) 249.
- sp. on greenhouse tomatoes, (36) 250.
- sp., relation to potato stem lesions, (39) 649.
- spp., notes, (29) 243, 650; (33) 56.
- spp., studies, (26) 448.

Botrytis—Continued.

- unusual spore forms of, (26) 243.
- vulgaris, notes, (27) 252; (30) 51, 349, 749.
- vulgaris, studies, (29) 753; (33) 55.
- Bots—**
- cottontail, notes, (35) 756.
- head and throat, of American game animals, (37) 565.
- in cattle, notes, (31) 98.
- of horses, studies, (39) 81, 156, 189, 686.
- Bottle—**
- collecting, description, (34) 751.
- tree, Victoria, crown gall affecting, (28) 447.
- Bottling—**
- establishments, law in Ohio, (33) 662.
- works, inspection in Indiana, (34) 861.
- Botulism—**
- antitoxic serum, (39) 788.
- due to canned goods, (37) 669, 670; (38) 208; (40) 558.
- immunization, (39) 388.
- in man, notes, (38) 383.
- isolation of organism, (39) 788.
- notes, (37) 165.
- relation to limber-neck in chickens, (36) 681.
- studies, (33) 866; (40) 176.
- Botys silacealis, life history and remedies, (28) 857.**
- Bouchea pinnatifida, analyses and digestibility, (27) 871; (32) 167.**
- Bouillon—**
- bacteriological, new, (40) 180.
- cubes—
- analyses, (30) 257; (34) 761.
- composition and nature, (30) 162, 163.
- examination, (31) 656, 854.
- making and judging, (31) 554.
- notes, (31) 658.
- Bouillons, bacteriological, analyses, (40) 310.**
- Bourletella hortensis affecting soy beans, (30) 753.**
- Bouteloua—**
- gracilis, culture experiments, (30) 632.
- oligostachya, seedling on ranges, (30) 35.
- spp., botanical studies, (26) 830.
- Bovidae in British Museum, (30) 767.**
- Bovie potentiometer, value, (38) 284.**
- Bovotuberculi, diagnostic value, (26) 180.**
- Bovovaccine—**
- use against tuberculosis, (32) 183.
- von Behring's, tests, (29) 884.
- Bowfin, use as a food, (38) 468.**
- Bowlders, blasting, (26) 591; (32) 85.**
- Box—**
- brush, strength and elasticity tests, (27) 43.
- cecidomyiid, notes, (30) 253.
- elder aphid, notes, (38) 257.
- elder aphid, studies, (38) 560.
- elder borer, notes, (26) 59.
- elder, poisoning of cows by, (37) 80.
- leaf midge, notes, (34) 752.
- leaf miner, fumigation experiments, (33) 859.
- leaf miner, notes, (30) 154; (32) 245.
- scale, notes, (28) 854.
- Boxes, packing, tests, (28) 843.**
- Boxwood—**
- leaf miner, European, (36) 551.
- leaf miner in California, (34) 64.
- leaf miner, notes, (40) 754.
- midge, remedies, (39) 362.
- Boy Scouts—**
- farm colony for, (28) 497.
- of Michigan, (28) 99.
- Boys'—**
- agricultural club champions in 1913, (30) 399.
- agricultural clubs—
- formation, (28) 792.
- in Maine, (33) 697.
- Massachusetts, (30) 597.
- Michigan, (30) 794.
- Oklahoma, (36) 94.
- Pennsylvania, (31) 393.
- West Virginia, (31) 297.
- notes, (29) 394, 395; (33) 599.
- agricultural competition, (33) 196.
- and girls'—
- agricultural clubs, (28) 194.
- club contests in Canada, (38) 297.
- clubs, notes, (28) 395.
- on the farm, (26) 299.
- city, agricultural instruction, (38) 194.

Boys'—Continued.

- club work—
 - manual for rural teachers, (36) 294.
 - paper on, (33) 195.
 - school credit for, (33) 799; (36) 293.
- clubs—
 - animal husbandry course for, (35) 396.
 - food production by, (38) 795.
 - gardening for, (36) 496.
 - in Arkansas, (33) 95.
 - Canada, (40) 396.
 - Massachusetts, (31) 598; (34) 394.
 - Michigan, projects for, (33) 792.
 - Nebraska, (32) 598.
 - Nevada, (34) 599.
 - rural schools, (32) 693.
 - Utah, (31) 693.
 - instructions for, (31) 298.
 - material supplied to, (33) 792.
 - notes, (29) 93; (33) 898.
 - organization, (31) 499, 793, 794; (32) 596, 692; (34) 793.
 - contest clubs, dangers in, (33) 296.
 - contests in Rhode Island, (28) 299.
 - corn and pig clubs, combining, (30) 694.
 - corn clubs—
 - in Alabama, (26) 293, 794.
 - Kentucky, (32) 197.
 - Philippines, (30) 395.
 - South Carolina, (28) 792.
 - notes, (27) 395; (28) 796; (29) 193; (31) 693; (32) 898; (33) 598.
 - corn growing contests, (29) 193.
 - demonstration work in the South, (26) 598; (32) 492.
 - farm labor camp, (40) 96.
 - field crop competitions, (34) 493.
 - gardening clubs in Rhode Island, (31) 693.
 - high school, in agriculture, (40) 598.
 - industrial and vocational training, (28) 499.
 - industrial clubs in Oregon, (31) 393; (32) 394.
 - menus, (29) 464.
 - metabolism, (40) 868.
 - metabolism experiments, (28) 260; (35) 370.
 - mobilization for farm work, (37) 199; (39) 90, 597, 693.
 - pig clubs—
 - in Alabama, (29) 792; (31) 794.
 - in Louisiana and Georgia, (31) 598.
 - organization, (30) 395.
 - potato clubs, organization, (27) 298.
 - potato growing contests in Canada, (31) 194.
 - poultry clubs, organization, (30) 395.
 - purposeful occupations, (31) 499.
 - stock judging contest, (27) 395, 396.
 - training farm in South Australia, (26) 799.
 - training in cooking, (30) 598, 763.
 - Working Reserve in New York, (40) 591.
- Brabantia rhizoleuca*, redescription, (38) 766.
- Brachistella*—
 - acuminata*, notes, (33) 357.
 - new genus, description, (26) 152.
- Brachyacantha* of North and South America, (26) 657.
- Brachycolus tritici*, studies, (35) 757.
- Brachydeutera argentata*, notes, (38) 557.
- Brachymelia* in domestic animals, studies, (26) 472.
- Brachyopa* n.sp., notes, (34) 554.
- Brachypodium pinnatum*, analyses, (33) 466.
- Brachyrhinidae*, notes, (30) 856.
- Brachysm* in cotton and other plants, (32) 731.
- Brachysporium phragmitis* n.sp., description, (27) 848.
- Brachytarsus niveovariegatus*, parasitic on white wax coccid, (35) 256.
- Brachytrypes achatinus*, notes, (28) 249, 353, 753.
- Brachyunguis* n.g. and n.spp., descriptions, (40) 650.
- Bracken*—
 - as source of potash, (37) 427, 817; (39) 220, 626; (40) 321.
 - eradication, (36) 740.
 - poisoning in cattle, (34) 383; (39) 891.
 - poisoning in horses, (37) 182; (38) 589.
- Bracon*—
 - brachycerus*, notes, (26) 861.
 - brevicornis*, see *Habrobracon brevicornis*.
 - hebetor*, see *Habrobracon hebetor*.
 - hylobii*, notes, (32) 852.
 - nearctic species, (37) 360.
 - sp., notes, (30) 659.

Bracon—Continued.

- sp., parasitic on beet webworm, (26) 250.
- sp., parasitic on cotton bollworm, (33) 750.
- sp., parasitism, (38) 364.
- (*Tropidobracon*) *meromyzae* n.sp., description, (31) 355.
- Braconidae*, British, notes, (31) 159; (32) 454; (40) 862.
- Braconids*, cocoon-spinning habits, (40) 761.
- Brahmaeidae*, monograph, (32) 850.
- Braim*—
 - extraction of poison from, (28) 280.
 - gaseous exchange of, (28) 765.
- Brains of domestic animals, (31) 168.
- Brake, prony, description and use, (29) 488.
- Bramble flea louse, notes, (28) 752.
- Bracon*—see also *Corn bran*, *Rye bran*, *Wheat bran*, etc.
 - analyses, (26) 362, 768; (27) 68, 171, 371; (29) 467, 570, 769; (30) 371; (31) 73, 168, 366, 467, 863; (32) 169, 465, 862; (33) 71, 371, 568, 665, 759; (34) 168, 371, 663; (35) 374; (36) 65; (37) 873; (38) 666; (39) 370; (40) 768.
 - analyses and use in bread making, (39) 870.
 - as human food, (34) 460.
 - bacterial flora of, (32) 75.
 - detection of ustiliginous spores in, (26) 408.
 - determination in flour and bread, (38) 206.
 - determination of smut spores in, (36) 146.
 - digestibility, (34) 760.
 - effect on baking qualities of flour (26) 356; (30) 363, 556.
 - fermenting power, (31) 413.
 - manurial value, (40) 127.
 - methods of analysis, (29) 311.
 - toxic, detection, (32) 178.
 - toxicity, (31) 555.
 - v. oats for milk production, (30) 576.
- Branch and twig borer, notes, (29) 657.
- Branding chute for cattle, description, (26) 385.
- Brandy—
 - adulteration and misbranding, (29) 766.
 - Federal tax on, (35) 646.
 - judging, (26) 209.
- Brasemopsis halysidotae* n.sp., description, (31) 355.
- Brassica*—
 - campestris*, dissemination by farm animals, (26) 839.
 - grafts, studies, (29) 434.
 - luncea, studies, (36) 228.
 - nigra, notes, (30) 145.
 - of Japan, key, (40) 626.
 - Raphanus* hybrids, studies, (29) 320.
 - seeds, biometrical study, (30) 331.
 - spp., genetic studies, (27) 533.
- Brassolis*—
 - isthmia* in Panama, (38) 58.
 - sophorae*, notes, (26) 354; (35) 257, 358.
- Braula coeca*, notes, (26) 781.
- Braxy*—
 - etiology, (37) 380.
 - immunization, (26) 578.
 - in lambs, (34) 383.
 - in sheep, (29) 179.
 - in sheep, studies, (28) 782.
 - like disease of sheep, (39) 686.
- Brazil-nut oil, digestibility, (38) 868.
- Brazil nuts, microscopic identification, (28) 565.
- Bread—
 - aleurone cells in, digestion, (40) 267.
 - analyses, (32) 354; (34) 460.
 - and bread cereals, textbook, (32) 659.
 - and the baking industry, (40) 460.
 - antineuritic properties, (38) 481.
 - army, digestibility, (29) 864.
 - as affected by—
 - hard water, (26) 761.
 - salt, (30) 462.
 - wrapping, (34) 761.
 - as food, (36) 464, 466.
 - as source of infection, (26) 562.
 - bacterial changes in, (27) 664.
 - bacterial contamination, (27) 764.
 - baked, sterility of, (26) 155.
 - barley, reaction and salt effect, (40) 67.
 - black, making, (36) 159.
 - blood, analyses, (33) 865.
 - Bulgarian, description, (27) 868.
 - changes in—
 - during baking and staling, (34) 859.
 - during cooking, (32) 354.
 - on aging, (32) 356.

Bread—Continued.

chemistry of, (26) 761.
 composition and digestibility, (30) 461.
 composition and nutritive value, (34) 760.
 conservation in United States, (38) 792.
 containing sugar, spoiling, (34) 660.
 crumbs, analyses, (30) 68; (37) 268.
 dechlorinated, (40) 461.
 detection of alum in, (27) 504.
 determination—
 and distribution of moisture in, (36) 506.
 of acid content, (33) 14.
 flour content, (34) 113.
 indigestible residue, (39) 502.
 loaf volume, (29) 565.
 quality, (29) 864.
 diet, protein supply in, (31) 860.
 diet, relation to polyneuritis in fowls, (32) 476.
 digestibility, (26) 358; (27) 462; (29) 565, 660;
 (35) 468; (36) 661; (40) 460.
 digestibility as affected by phosphates, (34) 660.
 dried, analyses, (38) 67.
 economy of different sized loaves, (38) 266.
 effect on intestinal flora, (40) 867.
 electric oven for baking, (29) 263.
 examination, (30) 258, 664; (32) 162; (33) 659.
 fermentation as affected by acids, (27) 268.
 fermentation, studies, (29) 864.
 field, notes, (32) 460, 562.
 food value of different types, (34) 459.
 for armies in the field, (26) 464.
 for special diets, analyses, (26) 464.
 from different flours, digestibility, (40) 360, 556,
 657.
 from soft wheat flour, (27) 867.
 from sprouted wheat, (27) 764.
 from sweet potatoes, (40) 267.
 from wheat substitutes, (39) 470, 769, 870, 871;
 (40) 360, 657.
 handbook, (27) 267.
 home-baked, palatability, (35) 469.
 improvers, notes, (26) 358.
 in the diet, (37) 364.
 infection by pathogenic bacteria, (35) 264.
 keeping quality, improving, (33) 752.
 leavening agent from chick-pea, (34) 560.
 leavening agents for, (33) 66.
 lime, description, (30) 859.
 making, (40) 172.
 making—
 and judging, (30) 164.
 bacteria in, (30) 859.
 boiled water in, (28) 660.
 butyric fermentation in, (35) 163.
 calcium carbonate in, (40) 461.
 calcium chlorid in, (29) 565; (31) 357.
 calcium glucosates in, (40) 460.
 calcium in, (32) 161.
 chemistry of, (37) 165; (38) 567.
 chemistry of, treatise, (31) 657.
 contests in Rhode Island, (28) 299.
 diastase in, (29) 765.
 dried potatoes in, (32) 252.
 durum wheat for, (33) 564.
 fermented blood and viscera in, (40) 461.
 from unmilled wheat, (40) 460.
 from whole wheat, (35) 555; (39) 669.
 in the home, (37) 364.
 industry in Milan, (32) 252.
 lactic acid in, (33) 864.
 lessons in, (28) 299; (34) 693.
 limewater in, (40) 66, 267, 461.
 municipal, treatise, (31) 855.
 notes, (31) 298, 299; (35) 859; (36) 663; (37) 468.
 potatoes in, (33) 162, 865; (40) 556.
 problems in, (28) 564.
 relation to atmospheric conditions, (33) 752.
 rice flour in, (33) 260.
 rye and barley in, (40) 556.
 studies, (30) 857.
 sugar beets in, (34) 660.
 sugar in, (32) 761; (33) 162, 461.
 treatise, (26) 357.
 yeast nutriments in, (36) 261.
 yeasts for, (39) 203.
 meal, analyses, (34) 665.
 measurement of acidity, (40) 66, 115.
 method for recording appearance, (26) 357.
 method of keeping fresh, (30) 164.
 methods of analysis, (32) 505.

Bread—Continued.

mustiness in, (36) 261.
 nutritive value, (26) 259, 358.
 nutritive value and cost, (37) 165.
 of Kaingang Indians of Brazil, (33) 752.
 oven temperature for, (33) 565.
 physical chemistry of, (29) 564; (33) 162; (40) 171.
 poisonous, (34) 660; (38) 712.
 porous, from starch, (34) 460.
 prices in France, (33) 694.
 prices, three centuries of, (40) 792.
 purchasing and use, (38) 867.
 relation to dental caries, (26) 867.
 ropy, (32) 659; (40) 66, 172, 360, 556, 863.
 rye-potato, digestive disturbances from, (33)
 361.
 salt-rising, notes, (30) 462.
 salt-rising, studies, (26) 562.
 scaling weight of, (31) 558.
 score card for, (30) 859.
 seasoning, digest of data, (33) 361.
 self-rising, paper on, (29) 465.
 situation in Switzerland, (40) 525.
 slimy, studies, (27) 462, 664, 808.
 stale, digestibility, (35) 469.
 stale, notes, (27) 764.
 stale, studies, (28) 861; (30) 859; (37) 363.
 staling, (34) 858, 859; (35) 162, 163.
 stringiness in, (26) 463.
 studies, (39) 366.
 substitutes for diabetic patients, (36) 560.
 supply of Fargo, (39) 67.
 supply of French Army, (37) 263.
 tobacco in, (31) 857.
 treatise, (29) 361, 660.
 use, (38) 567.
 war, analyses, (35) 367.
 war, digestibility, (34) 660.
 weighing, (26) 358.
 white, nutritive value, (36) 158.
 white, studies, (28) 458.
 wrapped and unwrapped, composition, (32)
 354, 355.
 wrapping, studies, (32) 659.
 yeast, studies, (26) 562.
 yoghurt, notes, (27) 765.

Breadfruit—
 analyses, (32) 761.
 analyses and use, (30) 363.
 dieback and leaf cast, (38) 350.
 disease, notes, (37) 838.
 for pigs, (37) 768.
 fungus disease affecting, (28) 153.
 recipes, (28) 660.
 root disease, notes, (27) 445.
 seedless, propagation, (31) 142; (32) 143.

Breakfast—
 as affecting working power of men, (39) 68.
 small, effect on heat production, (40) 868.

Breed, definition, (34) 466.

Breeders' organizations, cooperative, (32) 468.

Breeding—see also Animal breeding and Plant breeding.
 experiments, recording types of mating in, (34)
 72.
 numerical results of diverse systems, (34) 764.
 problems, application of genetics to, (39) 877.
 problems, mathematics in, (38) 367.

Breezes, land and sea, (32) 25.

**Bregmatothrips venustus n.g. and n.sp., descrip-
 tion, (27) 454.**

Bremia—
 graminicola n.sp., description, (30) 240.
 lactucae, notes, (37) 550.
 lactucae on lettuce, (32) 341.
 lactucae, treatment, (28) 446.

**Bremiella megasperma n.g. and n.sp., notes, (32)
 442.**

Brendel, F., biographical sketch, (28) 716.

Brevicoryne—
 brassicae, *see* Cabbage aphid.
 new genus, erection, (40) 650.

Brevipalpus obovatus, notes, (32) 557; (40) 656.

Breweries, fermentation processes in, (29) 509.

Brewers' grains—
 analyses, (26) 72, 266, 267, 362, 363, 568, 714; (27)
 570, 670; (28) 572; (29) 570, 769; (30) 565, 868;
 (31) 467; (33) 170, 759, 870; (37) 471; (38) 369,
 665; (39) 270, 773; (40) 72, 571.
 ash analyses, (29) 861.

- Brewers' grains—Continued.**
 composition and digestibility, (27) 669.
 digestibility, (35) 168.
 dried—
 analyses, (26) 165, 468, 568, 665, 770; (27) 68, 170, 570, 774, 775; (28) 265, 364, 464, 465, 669, 769; (29) 270, 367, 467, 666, 769; (30) 67, 68, 169, 565, 868; (31) 366, 467, 663, 766, 863; (32) 169, 259, 465, 568, 667; (33) 71, 371, 568; (34) 72, 169, 263, 371, 467, 566, 665; (35) 373, 374, 562, 867; (36) 167, 265, 667, 765; (37) 268, 767; (38) 67, 368, 369; (39) 167, 270, 370; (40) 470, 665.
 as a feeding stuff, (33) 467.
 effect on milk production, (26) 273.
 feeding value, (26) 72.
 for mules, (30) 772.
 drying, (27) 669.
 extracts, behavior in fermenting mixtures, (27) 502.
 fermenting power, (31) 413.
 for cows, (26) 476.
 methods of analysis, (29) 311.
 nutritive value, (29) 665.
 starch content, (26) 808.
- Brewers' yeast—**
 composition and digestibility, (34) 165.
 dried, analyses, (33) 568.
 nutritive value, (36) 864.
 refuse, composition and digestibility, (33) 568.
 use as a food, (35) 266.
- Brewery—**
 by-products, analyses, (39) 270.
 grains, nutritive value, increasing, (30) 565.
 mash, analyses, (26) 714.
 products, composition, (36) 864.
 residue feeds for sheep, (30) 371.
 waste, preservation, (34) 767.
 waste, utilization, (34) 262.
- Brick—**
 lava, efflorescence on, (29) 203.
 laying directly on concrete base, (38) 891.
 mortars, tests, (36) 286.
 pavements—
 construction, (34) 586.
 in King County, Washington, (33) 781.
 in Middle West, (40) 888.
 monolithic construction, (36) 384.
 tests, (30) 387.
 vitrified, for roads, (33) 686.
 paving, inspecting and testing, (30) 87.
 paving, wire-cut-lug v. repressed, (35) 789.
 repressed paving, tests, (31) 687.
 sand-lime, properties of, (31) 91.
 tests, (30) 788.
 use on country roads, (28) 890.
 vitrified, for country roads, (30) 86.
- Brickwork, tables for, (32) 188.**
- Bridge—**
 building as affected by the war, (40) 90.
 foundations, treatise, (35) 686.
 paints, tests, (36) 587.
 slabs, reinforced concrete, tests, (33) 487.
 stringers and ties, cresoting, (37) 386.
 stringers, fir, tests, (35) 584.
 timbers, preservation, (33) 544.
- Bridges—**
 and culverts, concrete, treatise, (35) 390.
 concrete—
 forms for, (31) 590.
 highway, construction, (32) 686.
 highway, design, (33) 588.
 internal temperature range, (29) 786.
 slab, design, (40) 189.
 specifications, (36) 285.
 construction, (29) 86, 182; (30) 386.
 construction and design, (35) 687.
 construction and maintenance, (33) 889.
 construction in Ontario, (38) 189.
 estimating curves for, (33) 487.
 floors for, (33) 393; (35) 84.
 floors for, loading, (35) 86.
 for remote stream crossings, (35) 391.
 highway—
 construction, (26) 890; (27) 190; (33) 688, 782.
 inspection, (33) 782.
 State control, (27) 588.
- I-beam and pile, standards for, (31) 890.**
 in Idaho, (28) 890.
 inspection and maintenance, (36) 386.
- Bridges—Continued.**
 law in Missouri, (31) 590.
 law in Ohio, (35) 493.
 materials for roadways of, (29) 785.
 motor truck loads for, (36) 489.
 of California, notes, (29) 386.
 paper on, (29) 291, 292.
 reinforced concrete, tests, (31) 91.
 reinforced concrete, treatise, (30) 788.
 roads, and paths, treatise, (27) 687.
 short-span, designing, (28) 684.
 slab and girder, plans, (38) 189.
 small, for country roads, (28) 485.
 specifications, (27) 891; (29) 487.
 steel—
 abutments for, (31) 890.
 and concrete highway, specifications, (34) 685.
 paints for, (36) 384.
 specifications, (29) 688; (32) 884.
 trail, construction, (34) 191.
- Brilliant green—**
 antiseptic value, (39) 586, 680; (40) 285, 581.
 for purification of vaccine virus, (39) 80.
- Brine—**
 effect on microorganisms, (30) 223.
 from fermentation of pickles, analyses, (34) 714.
 from the ocean and salt lakes, composition, (28) 725.
 microorganisms in, (30) 431; (33) 525.
 of central Oregon, (32) 280.
 salts, analyses, (38) 411.
- Briquets, tests, (31) 386.**
- Brisket disease—**
 in cattle, (32) 781; (37) 690.
 studies, (40) 482.
- British—**
 Cotton Growing Association, work, (31) 832; (34) 227.
 Meteorological Office, work, (34) 319.
- Broad-bean weevil, see *Bruchus rufimanus*.**
- Broccoli, culture, (39) 345.**
- Brodiaea capitata, root habits, (26) 729.**
- Bromacetophenone as a reagent, (40) 13.**
- Bromates, determination, (34) 712.**
- Brombenzene vapor, larvicidal value, (34) 359.**
- Bromocresol purple—**
 as indicator for tubercle bacilli, (40) 584.
 use in milk cultures, (37) 686.
- Brome grass—**
 as forage crop, (31) 829.
 as pasture crop, (39) 130, 434.
 awnless, culture experiments, (28) 532; (36) 32.
 composition as affected by irrigation, (28) 332.
 continuous culture, (40) 419.
 culture experiments, (28) 431; (29) 225, 226; (30) 228; (32) 36, 431, 528, 529; (34) 630; (36) 436; (40) 136.
 culture in western Nebraska, (35) 439.
 culture under dry farming, (30) 435; (31) 429; (33) 632; (36) 529.
 digestibility, (32) 770.
 false, description and eradication, (29) 142.
 field tests, (39) 135.
 field, variety tests, (40) 232.
 Hungarian, culture under irrigation, (33) 228.
 in dry farm rotations, (39) 131.
 irrigation experiments, (28) 130, 133.
 mountain, growth in relation to weather factors, (39) 809.
 palatability, (34) 865.
 pollination experiments, (37) 735.
 seed, germination tests, (27) 841.
 seeding on ranges, (29) 531; (30) 35.
 smooth, irrigation experiments, (32) 224.
 smut, treatment, (30) 241.
 soil moisture removal by, (40) 430.
 variation studies, (30) 36.
 varieties, (30) 434.
 water requirement, (32) 127.
 yields, (29) 631; (32) 531; (40) 735.
- Bromeliaceae, epiphytic, nutrition, (27) 227.**
- Bromids, effect on action of malt amylase, (37) 614.**
- Bromin—**
 absorption by vegetable oils and fats, (29) 612.
 as seed disinfectant, (37) 542.
 compounds in table salt, (31) 657.
 determination, (27) 497.
 determination in presence of chlorids, (35) 803.
 determination in water, (29) 797.

Bromin—Continued.

- effect on coagulation of milk, (28) 504.
- effect on proteins and amino acids, (34) 803.
- in German potash salts, (38) 726.
- oxidation of carbohydrate mixtures by, (37) 10.
- recovery from laboratory waste liquors, (36) 805.
- toxic effect on plants, (38) 628.
- use in seed treatment, (40) 443.
- water, effect on germination of seeds, (26) 820.

Bromium vitis, notes, (27) 558.

Bromoacetylglucose, preparation, (36) 313.

Bromoacetylxylose, notes, (34) 408.

Bromus—

- erectus, drought resisting qualities, (28) 533.
- erectus, fungus parasites, (40) 156.
- fruit and leaves, anatomy of, (34) 35.
- mollis, rust spores in seeds of, (30) 241.
- rubens, analyses, (33) 466.
- spp., culture in New Zealand, (29) 428.
- tectorum, geographical distribution, (26) 335.
- tectorum, roots of, (26) 535.
- uniloides, analyses, (31) 863.
- uniloides, culture under dry land conditions (31) 429.

Bronchitis—

- in calves, (26) 483.
- verminous, in bovines, (31) 85.
- verminous, in dogs, (36) 676.

Bronchopneumonia—

- contagious, (36) 384.
- in calves, (39) 290; (40) 887.

Bronthyspa froggattii, notes, (40) 260.

Bronze on bronze, friction coefficients, (36) 682.

Brooder—

- description, (26) 572; (32) 570.
- house, construction, (35) 773.
- house, colony, construction, (29) 293; (33) 98; (36) 770.
- stoves, tests, (34) 178.

Brooders—

- and brooding, notes, (33) 273.
- disinfection, (28) 73.
- fresh air, (27) 599.
- fresh air, construction, (35) 495.
- notes, (32) 264.
- tests, (28) 773; (30) 373.

Brooding—

- colony, (37) 71.
- instinct in relation to egg production, (33) 74.

Broom—

- as a sand binder, (29) 427.

corn—

- analyses, (37) 539.
- as a feeding stuff, (29) 223.
- covered kernel smut on, (39) 756.
- culture, (27) 299; (34) 630.

corn, culture—

- experiments, (27) 136, 529; (28) 532; (29) 225, 426; (30) 136; (32) 431; (34) 229; (36) 34; (38) 830; (39) 128.
- handbook, (29) 737.
- in Arizona, (32) 226.
- eastern Oregon, (38) 432.
- Iowa, (39) 738.
- New Mexico, (40) 18.
- Texas Panhandle, (29) 430.
- under dry farming, (31) 429; (37) 329.

corn—

- dwarf, culture, (36) 229.
- fertilizer experiments, (26) 830.
- millet, culture in Texas Panhandle, (29) 429.
- notes, (29) 395.
- smuts, cause and treatment, (30) 47.
- standard, (39) 441.
- varieties, (26) 733, 830; (27) 736; (29) 32, 222; (30) 525; (36) 133, 831; (37) 329; (38) 830, 832.
- variety tests, (39) 128.
- water requirement, (32) 226, 335.
- yields, (29) 32.
- yields of stover, (40) 731.
- grass, seeding on ranges, (30) 35.
- making, notes, (29) 395.
- millet, classification, (33) 834.
- millet seed, analyses and nutritive value, (33) 870.
- plant seed, germination tests, (29) 740.
- rape, notes, (37) 239.
- Spanish, notes, (29) 441.

Broomella zeae n.sp., notes, (37) 148.

Brossimum alicastrum, analyses, (28) 464.

Brotolomia meticulosa, notes, (30) 356.

Broussonetia papyrifera, proteolytic enzymes in latex of, (31) 409.

Brown rot—

- in northern Vermont, (35) 849.

Sclerotinia, hosts of, (33) 247.

studies, (31) 749, 843.

Brown-tail fungus, notes, (27) 456.

Brown-tail moth—

- bacillary septicemia of, (30) 54.

- control, (26) 561, 855; (28) 553; (29) 762; (30) 654; (33) 57; (36) 456; (37) 254, 563; (38) 143, 159; (39) 750, 760, 764, 804.

control—

- by starlings, (40) 647.
- in Canada, (32) 448; [(33) 746; (35) 465; (38) 556; (40) 57.
- Connecticut, (35) 53.
- Massachusetts, (27) 455; (28) 643; (30) 98, 743; (33) 144; (36) 843; (37) 646.
- New Brunswick, (27) 558.
- New Hampshire, (33) 858; (35) 461.
- United States, (31) 251.

egg parasite of, (26) 557.

important natural enemy of, (26) 350.

in Canada, (38) 459.

Connecticut, (37) 259.

France, (29) 558.

New Brunswick, (27) 356.

Nova Scotia, (30) 752; (35) 853.

larvae, poison glands of, (33) 558.

- notes, (26) 59, 753; (27) 356, 658, 857; (28) 57, 155, 752; (29) 251, 252; (30) 53, 549, 854; (33) 254; (34) 250, 752; (38) 58, 358.

- parasites of, (28) 859; (30) 460; (31) 355; (37) 459; (39) 661.

wilt disease, notes, (28) 859.

Brown thrasher, food habits, (38) 457.

Brown top, analyses, (30) 565.

Bruchea libiscl, studies, (40) 754.

Bruchidae—

- catalogue, (30) 458.

in Hawaiian Islands, (40) 266.

in South Africa, (40) 861.

North American, host plants and parasites, (26) 861.

Bruchophagus funebris, see Clover seed chalcid fly.

Bruchus—

- chinensis, see Cowpea weevil.

limbatus, notes, (34) 857.

obtectus, see Bean weevil.

pisorum, see Pea weevil.

prosopis, life history, (29) 253.

quadrimaculatus, notes, (34) 754; (40) 170.

rufimanus, control, (39) 256.

rufimanus, studies, (27) 563.

spp., control, (39) 664.

spp., notes, (27) 155.

spp., studies, (39) 363.

Brucin, detection in water, (34) 410.

Bruggmanniella pisoniae n.sp., description, (27) 57.

Brunchorstia destruens, notes, (30) 453.

Brush—

- disposal, (29) 545.

feed, analyses, (27) 170.

ground, analyses, (30) 868.

meal, composition and digestibility, (29) 373.

pulling, piling, and scattering, (36) 844.

Brussels sprouts—

- finger-and-toe disease, (31) 149.

pollination experiments, (35) 342.

Brustseuche—

- immunization, (31) 184.

investigations, (28) 482.

treatment, (28) 287; (30) 285.

Bryobia praetiosa (pratensis), see Clover mite.

Bryonia dioica, Mendelian inheritance in, (35) 819.

Bryophyllum—

calycinum—

- growth studies, (37) 127, 324, 325, 821.

inhibition of regeneration or growth in, (34) 730.

regeneration, (40) 224.

root formation and geotropic curvatures of stem, (35) 820.

culture under shade, (27) 741

Bryophytes, epiphytic, on trees in Denmark, (36) 825.

Bubble fountains, bacteriology of, (35) 860.

Bubonic plague, transmission by rat fleas, (30) 254.

- Bucculatrix**—
*canadensis*ella, notes, (26) 147; (23) 351; (30) 665.
ileocella n. sp., description, (33) 748.
thurberiella n.sp., description, (31) 352.
thurberiella, notes, (35) 657; (36) 56.
- Buck beans**, new glucosid from, (26) 24.
- Buckeye**, red, toxicity, (40) 778.
- Buckhorn**, geographical distribution, (26) 335.
- Buckthorn**—
 as hedge plant, (37) 241.
 varieties, (37) 143.
- Buckwheat**—
 analyses, (29) 270; (31) 366.
 as affected by—
 chemicals, (32) 538.
 preceding crop, (40) 623.
 uranium and lead, (28) 731.
 as cover crop, (32) 332.
 cover crop for orchards, (33) 240.
 green manure, (38) 817; (39) 326; (40) 229, 734.
 nurse crop, (39) 130.
 supplement for wheat, (37) 263, 895.
 assimilation of phosphorites by, (27) 340.
 bran, analyses, (26) 714; (27) 774; (29) 769; (30) 169; (31) 663; (32) 169, 667; (33) 568; (34) 263; (35) 562, 867; (36) 667; (40) 571.
 bran and middlings, analyses, (28) 464.
 bushel weights, (37) 889.
 by-products, analyses, (28) 364; (30) 68.
 chlorin requirement, (36) 439.
 cost of production, (37) 191.
 critical period of growing season, (39) 811.
 culture, (30) 228; (37) 895; (39) 834.
 culture—
 and improvement, (27) 137.
 experiments, (27) 638, 639; (32) 132; (33) 830; (36) 32, 133; (38) 634; (39) 124, 125, 435; (40) 735, 825.
 for chicken feed, (38) 827.
 in Hawaii, (32) 729.
 decomposition in soil, (40) 214.
 effect on following crop, (38) 337; (40) 623.
 effect on milk and butter, (34) 570.
 elongation of hypocotyl, (28) 739.
 feed, analyses, (27) 170, 670; (29) 367; (31) 467; (36) 167; (38) 369.
 feed, middlings, and offal, analyses, (40) 665.
 fertilizer experiments, (26) 331, 527, 725; (27) 638; (28) 721, 735, 736; (29) 22, 624, 625, 821; (30) 216, 229, 427, 820; (34) 130; (35) 428; (36) 427, 626; (37) 521; (38) 817; (39) 623, 624, 726; (40) 735, 825.
 flour, analyses, (26) 714; (39) 870.
 flour, digestibility of protein of, (33) 564.
 flour, globulin of, (39) 202.
 germination—
 as affected by temperature, (38) 25.
 tests in hydrogen peroxid, (27) 201.
 globulin of, (39) 201.
 growing with soy beans, (39) 741.
 growth—
 as affected by stimulants, (35) 434.
 in association with weeds, (38) 734.
 greenhouses, seasonal variations, (38) 627.
 heated soils, (31) 216.
 water cultures, (38) 627.
 hulls, analyses, (27) 170; (29) 666; (36) 268; (40) 72.
 hulls, fluorescent substance in, (31) 280.
 liming experiments, (29) 223; (38) 22.
 maltase content, (31) 204.
 meal, analyses, (31) 663.
 middlings—
 analyses, (26) 665; (27) 670, 774, 872; (28) 669; (29) 666; (30) 169, 868; (31) 366, 663; (32) 667; (33) 71; (34) 72, 263, 665; (35) 867; (36) 167, 268; (37) 268; (38) 369; (40) 665.
 and offal, analyses, (39) 270.
 digestibility, (29) 367.
 milling experiments, (40) 556.
 mixed feed, analyses, (30) 169.
 nematodes affecting, (29) 151.
 nutrition, studies, (31) 729.
 offal, analyses, (27) 570, 774; (32) 667; (34) 665; (36) 167; (39) 270; (40) 665.
 planting and harvesting dates, (26) 533.
 plants, physiological balance of nutrient media for, (39) 732.
 poisoning in pigs, (38) 589.
 products, analyses, (32) 568; (38) 67.
- Buckwheat—Continued.**
 rotation experiments, (40) 229.
 rye stalk disease affecting, (26) 546.
 screenings—
 analyses, (26) 165.
 analyses and feeding value, (34) 663.
 ground, analyses, (33) 371.
 seeding experiments, (39) 130.
 starch, studies, (31) 828.
 studies of species, (27) 137.
 transpiration and water requirement, (39) 631, 732.
 varieties, (27) 31, 137, 638, 736; (30) 228, 435, 525; (31) 829, 831; (32) 431; (33) 33, 34, 632; (34) 630; (35) 528; (36) 32, 437; (38) 634.
 varieties for Alaska, (39) 125.
 variety tests, (39) 130, 738; (40) 735.
 water requirement, (29) 826; (32) 127.
 yield in relation to physical properties of soils, (38) 815.
 young and mature, salt requirements, (39) 524, 630; (40) 425.
- Bud**—
 click beetle, notes, (32) 651.
 development, studies, (37) 324.
 mite, remedies, (38) 468; (40) 266.
 moth—
 eye-spotted, notes, (32) 651; (38) 459, 655; (40) 756.
 eye-spotted, remedies, (33) 59; (39) 659.
 in Nova Scotia, (35) 853.
 lesser, studies, (31) 252, 755; (36) 656.
 notes, (30) 154.
 sport on lilac, (39) 244.
 variation—
 factors in, (37) 433.
 in Coleus, (32) 726.
 in dahlias, (40) 447.
 in oranges, (39) 142, 417, 448.
 notes, (32) 638.
 relation to fruit markings, (27) 147.
 weevils and other bud-feeding insects, (35) 363.
 weevils, notes, (32) 651.
- Buda kale** as forage crop for sheep, (28) 267.
- Budding**, notes, (29) 838.
- Buddleia**, notes, (40) 844.
- Buds**, anatomical and biological studies, (27) 30.
- Buffalo**—
 and cattle hybrid, notes, (28) 68.
 and cattle hybrids, skull characters, (38) 65.
 blood, analyses, (36) 779.
 fats, analyses, (27) 670.
 fly, bionomics, (39) 467.
 gnats—
 American, synopsis, (31) 254.
 notes, (29) 454.
 relation to pellagra, (28) 853.
 studies, (34) 756.
 grass—
 composition, (27) 668.
 digestibility, (27) 669; (37) 168.
 hay, chloroform extract of, (31) 71.
 hay, mineral constituents, digestibility, (40) 769.
 water requirement, (32) 127.
 meat and beef, differentiation, (30) 314.
 meat, nutritive value, (26) 355.
 milk, analyses, (27) 473.
 milk, nutritive value, (26) 574.
 moth, notes, (32) 250.
 tree hopper, notes, (35) 54; (40) 340.
- Buffaloes**—
 American, preservation, (30) 469.
 and cattle, crossing experiments, (31) 266, 566, 567.
 breeding in Western Transcaucasia, (28) 670.
 domestic, characteristics, (31) 566.
 East Indian, tuberculosis in, (26) 378.
 flagellated organism from ulcers, (26) 784.
 Formosan, measurement, (33) 469.
 immunization against hemorrhagic septicemia, (28) 281, 881.
 immunization against rinderpest, (38) 484.
 in North America, (33) 470.
 Indian, milk analyses, (28) 274.
 milk yielding, of Bombay, (32) 367.
 old pictures of, (28) 365.
 wood, in Canada, (33) 843.
- Bufo**—
 halophilus, economic status, (32) 244

Bufo—Continued.

- marinus, blood parasite of, (26) 883.
- regularis, protozoan parasites of, (30) 680.
- Bugbane, insecticidal value, (31) 350.
- Bugyi experimental plat, report, (36) 830.
- Building—
 - and construction methods, treatise, (29) 86.
 - and loan associations, law in Indiana, (31) 594.
 - code suggestions, (36) 687.
 - construction, treatise, (31) 386.
 - materials—
 - heat transmission through, (31) 688; (38) 87, 492.
 - properties of, (31) 91.
 - stone deposits in Virginia coastal plain, (29) 513.
- Buildings—
 - for small farms, (31) 786.
 - insects affecting, (28) 248.
 - lightning protection of, (29) 88.
 - public, inspection in South Dakota, (29) 567.
- Bulbar paralysis, infectious—
 - feeding experiments with virus of, (30) 181.
 - in mules in Florida, (34) 275.
 - notes, (31) 579.
 - treatment, (33) 179.
- Bulbils dactyloides, culture in Hawaii, (32) 729.
- Bulbocephalus n.g. and n.spp., descriptions, (37) 558.
- Bulbs—
 - culture experiments, (30) 145.
 - culture, manual, (32) 143.
 - culture, treatise, (31) 743; (36) 643.
 - etherized, enzymatic activities of, (30) 728.
 - flowering, composition and fertilizer requirements, (28) 49.
 - flowering, culture, (35) 450.
 - of doubtful food value, (32) 855.
 - ornamental, descriptive list, (31) 743.
 - rest period in, (33) 223.
 - treatise, (26) 337.
- Bulgaria polymorpha on beech, (30) 254.
- Bulgarian bread, description, (27) 868.
- Bull associations, cooperative, (37) 574; (39) 483; (40) 79.
- Bullfinches, feeding habits, (28) 450.
- Bullocks, Deccan, as affected by castration, (32) 865.
- Bulls—*see also* Sires.
 - dairy, selection, (37) 473.
 - immunization against hemorrhagic septicemia, (28) 881.
 - influence upon offspring, (37) 373.
 - maintenance test with oat hulls, (29) 367.
 - management, (33) 698.
 - mature, as sires, (31) 475.
- Bumblebees—
 - and their ways, (30) 52.
 - collection of pollen by, (34) 556.
 - domestication, (28) 357.
 - inquiline, in British Columbia, (33) 658.
 - life history, (38) 564; (40) 170.
 - nesting habits, (40) 655.
 - notes, (27) 459.
 - paper on, (38) 256.
 - parasite of, (32) 759.
 - pollinating—
 - alfalfa, (26) 633; (31) 134; (40) 760.
 - fruits, (28) 237.
 - red clover, (27) 359.
 - relation to *Nosema apis*, (27) 761.
 - treatise, (28) 562.
- Bunias orientalis, heredity of fasciation in, (33) 727.
- Bunostomum phlebotomum in Philippines, (37) 277.
- Bupalus piniarius—
 - biology and parasites of, (33) 858.
 - fungus disease affecting, (26) 757.
 - life history, (34) 251.
 - yellow disease or jaundice of, (26) 759.
- Buprestidae—
 - notes, (37) 566.
 - of northern California, (37) 666.
 - of Philippines, (31) 553.
 - southwestern, studies, (39) 264.
- Buprestis—
 - in North America, (40) 266.
 - spp., biological notes, (39) 467.
- Burbank, Luther—
 - life and work, (34) 440.
 - methods and discoveries of, (32) 143.
 - treatise, (37) 342.

- Burbot, use as a food, (38) 468.
- Burdock, lesser, destruction by *Metzneria lappella*, (33) 859.
- Bureau of Chemistry, Plant Industry, *etc.*, *see* United States Department of Agriculture.
- Burette—
 - automatic, description, (40) 505.
 - for calibrating Babcock test bottles, (31) 875.
 - support, description, (36) 805.
- Burgundy mixture—
 - acid and alkaline, (39) 151, 548.
 - as substitute for Bordeaux mixture, (34) 843.
 - combining with soap, (40) 746.
 - copper content, (34) 748.
 - fungicidal value, (33) 152; (40) 747.
 - notes, (35) 46.
 - preparation, (30) 153; (40) 252.
 - preparation and use, (27) 254; (34) 643.
 - use, (40) 750.
 - wetting capacity, (27) 753.
- Buri palm sap, studies, (30) 16.
- Burkheiser salt, fertilizing value, (28) 736; (29) 214; (30) 326; (31) 518.
- Burnet—
 - analyses, (27) 371.
 - sheep, culture in Rhodesia, (27) 32.
 - sheep, notes, (30) 434.
- Burns, treatment, (38) 885; (39) 488; (40) 780, 883.
- Bursa hybrids, defective inheritance ratios in, (28) 531.
- Bursati, studies, (32) 81.
- Bush—
 - disease in livestock, (26) 581.
 - sickness, prevention, (30) 83; (31) 381.
- Bushel weight—
 - determination, (33) 534.
 - determinations, accuracy of, (31) 131.
- Busseola sorghicida, notes, (28) 555.
- Butcher shops, inspection in Porto Rico, (26) 261.
- Butchers' goods manufactories for slaughterhouses, (32) 457.
- Buteo—
 - borealis calurus, feeding habits, (30) 654.
 - platypterus, monograph, (26) 245.
- Butia palm as a food, (35) 266.
- Butorides virescens anthonyi, destruction of locusts by, (28) 351.
- Butter—
 - abnormal, detection, (27) 812.
 - absorption of water by, (32) 577.
 - adulteration, detection, (26) 212, 410, 508, 610; (27) 312, 716, 812; (28) 809; (29) 508; (31) 210; (33) 505; (34) 13.
 - adulteration with acetin, (26) 508.
 - aldehyde figure, (27) 209.
 - American creamery, composition, (28) 76.
 - analyses, (26) 80, 171; (27) 75, 473, 677; (28) 76, 178; (30) 76, 178; (31) 359, 509, 576; (32) 675; (36) 571; (38) 666.
 - analysis, miscibility curves in, (26) 508.
 - analytical standards for, (26) 712.
 - anchovy, examination, (29) 361.
 - and lard, comparative value for growth, (36) 160.
 - and milk fat, differences between, (38) 280.
 - as affected by—
 - age of cow, (38) 578.
 - alkali water, (27) 283.
 - cold storage, (27) 376; (29) 268.
 - cotton seed products, (31) 370; (37) 72.
 - cream molds, (39) 785.
 - cream quality, (33) 80.
 - fat globules in cream, (29) 579.
 - feeding stuffs, (31) 77, 375; (32) 270; (34) 471, 570; (39) 485.
 - microorganisms, (26) 576.
 - pasteurization, (39) 78.
 - phosphates, (27) 326.
 - plane of nutrition of cow, (35) 774.
 - preservatives, (26) 778.
 - salt, (28) 278.
 - soy bean cake, (28) 372.
 - too acid a ferment, (31) 375.
 - bacteria in, (31) 575; (34) 672.
 - bibliography, (31) 176.
 - brands, State and National, (40) 476.
 - catalase in, (29) 508.
 - cause of mottling, (27) 74; (28) 879.
 - changes in during storage, (36) 773; (38) 880; (39) 78.

Butter—Continued.

- chemistry and physical constants, (26) 477.
- cold storage—
 - cost, (27) 164.
 - oxidation, (35) 875.
 - statistics, (28) 869.
- collapsible tin tubes for, (28) 776.
- color, feeding to cows, (38) 680.
- color standard, (27) 575, 678.
- composition, (27) 879.
- composition and characteristics, (34) 380.
- composition, factors affecting, (32) 473.
- cost of distribution, (29) 492.
- cost of making, (27) 377.
- creamery—
 - manufacture and marketing, (36) 275.
 - marketing, (36) 776.
 - marketing cooperatively, (30) 593.
 - marketing in Wisconsin and Minnesota (39) 580.
 - prices and quality, (39) 581.
 - temperature at Canadian shipping points, (29) 673.
 - temperature at shipping stations, (27) 676.
- dairy and creamery, water content, (40) 461.
- Danish, bacteriological study, (26) 478.
- Danish, examination, (27) 283.
- detection of—
 - added color, (39) 416.
 - benzoic acid in, (28) 208.
 - foreign fats in, (39) 715, 805.
 - pigments in, (36) 16.
- deterioration during storage, (38) 479.
- determination of—
 - fat and salt in, (27) 614.
 - moisture in, (26) 806; (27) 312; (28) 474.
 - salt in, (39) 505.
 - yellow color in, (35) 278.
- differentiating various kinds, (26) 610.
- digestibility, (34) 364.
- distribution of moisture and salt in, (30) 877.
- educational scoring, (40) 673.
- effect of X-rays on fermentation, (27) 231.
- effect on growth, (30) 560; (31) 560.
- enzymes of, (38) 479.
- examination, (27) 412; (29) 280.
- exhibition in New South Wales, (26) 275.
- export from Tasmania, (30) 378.
- export from Victoria, (28) 277.
- exports and imports of Canada, (29) 673; (30) 574.
- exports of Denmark, (27) 391.
- factories, cooperative, in Wisconsin, (28) 895.
- factories, management, (36) 574.
- factors affecting—
 - composition, (28) 474.
 - quality, (29) 674.
 - water content, (28) 374; (31) 375.
- fat, *see* Fat and Milk fat.
- fatty acids of, (29) 508.
- fishy flavor in, (26) 778; (34) 473.
- flora as affected by salt, (34) 776.
- from buffalo milk, (28) 670.
- creameries in Alberta, quality, (29) 376.
- ewe's milk, (26) 275; (31) 375.
- foot-and-mouth diseased cows, (32) 76.
- heated cream, detection, (27) 114.
- mixed and unmixed milk, (31) 475.
- neutralized cream, (39) 384.
- pasteurized cream, (37) 576; (39) 785.
- pasteurized cream, keeping quality, (37) 476.
- sheep and buffalo milk, analyses, (27) 575.
- whey, (26) 779; (32) 270, 873.
- whey, branding, (28) 278.
- gumminess in, (38) 633.
- homogenizer for, (29) 799.
- homogenizing, (29) 880.
- imports into Peru, (27) 469.
- imports into United Kingdom, (26) 479.
- industry in—
 - Netherlands, (28) 178.
 - New Zealand, (38) 281.
 - Siberia, (37) 778.
 - United Kingdom, (28) 178.
 - United States, (30) 777, 791; (35) 278.
 - Wisconsin, (30) 679.
- inspection, (28) 473.

Butter—Continued.

- inspection—
 - and sale in Netherlands, (28) 776.
 - in Maine, (28) 879; (31) 77, 576.
 - in Queenstown, (30) 476.
- international trade in, (27) 574.
- judging by score cards, (27) 74.
- keeping quality, studies, (39) 78.
- law in Denmark, (26) 479.
- laws and regulations in Nebraska, (30) 679.
- legal limits, (30) 679; (40) 476.
- low olein content of, (31) 811.
- machine, mechanical, tests, (36) 571.
- makers convention in Washington, D. C., (35) 275.
- making—
 - directions, (26) 778.
 - experiments, (27) 778; (30) 75, 76; (31) 675.
 - Friwi method, (28) 776.
 - history, (28) 370.
 - in Idaho, (28) 76.
 - Northern Europe, (30) 177.
 - Philippines, (39) 785.
 - South Australia, (29) 280.
 - Sweden, (26) 477.
- lime and other alkalis in, (30) 679.
- loss of fat in, (28) 277.
- manual, (38) 281.
- neutralized cream in, (35) 277.
- notes, (27) 179, 283; (28) 371.
- on the farm, (26) 82; (27) 879; (29) 580; (30) 271; (31) 675; (32) 577; (33) 98, 577; (34) 777; (35) 572, 573; (36) 95; (37) 175; (38) 480, 580.
- pasteurization for, (27) 179; (33) 473; (38) 880.
- starters for, (28) 374; (32) 370.
- starters, propagation, (26) 299.
- studies, (34) 78, 269.
- treatise, (26) 275, 778.
- v. cream selling, (35) 379.
- manufacture, (36) 574; (40) 79, 81, 415.
- manufacture for storage, (28) 76.
- market, of Boston, (31) 575.
- marketing, (28) 473; (32) 874; (35) 573; (36) 376.
- marketing—
 - by parcel post, (39) 182.
 - cooperatively, (26) 92; (38) 494.
 - in Canada, (38) 294.
 - Kansas, (37) 696.
 - North Carolina, (33) 595.
 - the South, (32) 577.
- method of preserving, (39) 282.
- methods of analysis, (26) 806; (29) 413; (33) 253, 505; (40) 311.
- moisture control in, (28) 474; (29) 777.
- moisture test, description, (27) 311.
- mold, cause and prevention, (37) 777.
- moldiness in, (32) 675; (36) 176.
- monthly receipts, (28) 871.
- oil, blowing at pasteurizing temperature, (38) 77.
- oily flavor in, (36) 773.
- overrun in (29) 777; (32) 473; (34) 672.
- physical and chemical constants, (26) 80.
- preservation, (31) 176.
- preservation with boric acid, (28) 277.
- preservatives, detection, (31) 508, 811.
- prices—
 - as affected by cold storage, (28) 871.
 - from producer to consumer, (33) 175.
 - in Chicago, (32) 490.
 - in Ireland, (31) 96.
- print, variation in weight, (33) 80; (38) 882.
- production—
 - as affected by oestrus, (34) 670.
 - in California, (28) 371.
 - Ireland, (27) 375.
 - Italy, (27) 472.
 - Queensland, (27) 489.
 - winter, (26) 275.
- relation to escutcheon, (34) 670.
- quality, as affected by—
 - acidity of cream, (38) 281; (39) 679.
 - legumes, (29) 278.
 - sesame cake, (26) 369.
- rancid, as a cause of intestinal trouble, (26) 275.
- rancidity, (39) 485.
- relation to microorganisms, (26) 372.

Butter—Continued.

- removal of odors from, (33) 474.
- renovated, refractive index, (27) 615.
- renovating in Canada, (28) 278.
- renovation, use of lime in, (37) 313.
- rôle in glycogen formation, (31) 763.
- scoring exhibitions at Hango, (28) 374.
- shrinkage—
 - in, (30) 474.
 - in prints, (28) 76.
 - in shipping, (39) 580.
 - in storage, (36) 176; (38) 77.
 - tests, (35) 471.
- Siberian, examination, (27) 283.
- Siberian, on Hamburg market, (31) 675.
- specific heat, (32) 715.
- spoiling and preservation, (26) 355.
- standards, (29) 777; (38) 480; (39) 786; (40) 461.
- statistics in United States, (28) 390; (33) 894.
- sterilization, (29) 280.
- storage, (39) 770.
- storage, as affected by salt, (39) 384.
- storage, factors affecting flavor, (29) 71.
- streptococci in, (28) 581.
- substitutes—

- accessory growth substance in, (38) 265.
- composition, (32) 63.
- for, (33) 660; (36) 466.
- nutritive value, (37) 165.
- purchasing and use, (38) 867.

- Swedish "Rune" brand, (34) 572.
- sweet cream, keeping quality, (31) 175.
- Swiss, characteristics, (26) 372.
- tallowy, (39) 785.
- testing, (29) 876.
- tests in Great Britain, (27) 676.
- textbook, (31) 468; (40) 283.
- tree, India, seeds of, (32) 613.
- tubercle bacilli in, (26) 880; (27) 879; (37) 481.
- typhoid infection through, (38) 265.
- valuation, fat v. moisture standard, (35) 378.
- vegetable, description, (33) 660.
- vitamin content, (39) 770.
- Vorbruch, manufacture, (26) 372.
- wash water, iron salts in, (31) 375.
- water content, factors affecting, (38) 781.
- whew, *see* Whey butter.
- yellow color in, (33) 175.
- yields of different breeds, (29) 475.

Buttercups—

- as affected by top dressing, (26) 40.
- destruction with sulphate of ammonia, (29) 530.

Butterfish, nematodes in, (36) 662.**Butterflies—**

- collecting and preserving, (35) 594.
- common, of United States, (32) 756.
- injurious to alfalfa, (26) 655.
- injurious to coconut, (39) 160.
- manual, (34) 552.
- mimicry in, (37) 55.
- North American, mimicry in, (28) 655.
- of Australia, monograph, (34) 453.
- of India, (35) 358.
- pollination of alfalfa by, (26) 633; (31) 134.
- treatise, (27) 558; (37) 358; (38) 260.

Buttermilk—

- analyses, (26) 80; (27) 377; (39) 278.
- analyses and use, (26) 477.
- artificial, manufacture, (34) 474.
- as affected by—
 - boiling, (31) 505.
 - Bacillus Bulgaricus*, (39) 486.
 - cooking, (29) 160.
- as food, (37) 669.
- casein from, (39) 386.
- cheese from ducks, (35) 377.
- cheese, manufacture, (33) 382; (40) 379.
- chemistry and physical constants, (26) 477.
- condensed, analyses, (39) 773.
- dried casein from (29) 676.
- for chicks, (34) 881; (39) 377.
- for pigs, (27) 179; (37) 762.
- freedom from typhoid bacilli, (40) 476.
- from pasteurized cream, improvement, (29) 674.
- from sheep and buffalo milk, analyses, (27) 575.
- manufacture, (34) 775.
- manufacture and use, (40) 379.
- market, of Iowa, (35) 572.
- metallic flavor in, (35) 276.
- methods of analysis, (31) 114.

Buttermilk—Continued.

- porridge, judging, (40) 807.
- powder, manufacture, (30) 576.
- preparation and use, (34) 474.
- preservation, (31) 874.
- protein content, (31) 413.
- testing, (30) 875; (39) 182; (40) 378.
- utilization, (26) 779.
- variation in fat content, (28) 277.
- watered, detection, (30) 508.

Butternut—

- oil, digestibility, (38) 868.
- posts, preservation, (36) 244.

Butternuts, culture in Minnesota, (32) 840.**Butyric acid—**

- action of symbiotes on, (40) 464.
- determination, (38) 506; (39) 314.
- effect on bread fermentation, (27) 268.
- effect on plants, (37) 224.
- in silage, (28) 608.
- rôle in digestion, (36) 763.
- separation and determination in biological products, (37) 206.

Butyrometer, modified, for cheese, (29) 311.**Butyrospermum parkii, description, (29) 60.****Buzzards—**

- blood parasites of, (26) 883.
- relation to anthrax, (26) 678; (28) 79, 678.
- relation to hog cholera, (34) 275.

Byrrhidae, catalogue, (26) 560.**Byturus—**

- tomentosus, notes, (32) 448; (43) 652; (40) 265.
- unicolor, notes, (28) 158.

Cabbage—

- analyses and feeding value, (34) 664.
- and collards, crossing, (31) 438; (35) 35.
- antineuritic value as affected by heat and alkalis, (40) 565.
- antiscorbutic value, (39) 771.

aphis—

- control by lady beetles, (34) 555.
- control by parasites, (37) 459.
- endoparasites of, (34) 753.
- false, notes, (39) 762.
- false, studies, (35) 756.
- hemolysin in, (40) 650.
- new generic name, (40) 650.
- notes, (28) 254; (31) 649; (32) 753; (34) 62.
- parasites of, (26) 149.
- remedies, (30) 654.
- wing development, (40) 456.

as affected by—

- previous crop of sesame, (31) 329.
- sterilization of soil, (40) 619.

ash analyses, (29) 861.

- bacterial black rot, studies, (33) 346.
- bacterial rot, notes, (29) 547.

black rot—

- notes, (34) 644; (40) 47, 844.
- or brown rot, notes, (37) 150.
- studies, (39) 149.

blackleg—

- notes, (39) 52.
- organism, host range, (31) 446.
- studies, (40) 846.

breeding experiments, (29) 638; (38) 40, 241; (39) 542.**breeding for disease resistance, (31) 840.****bug, *see* Harlequin cabbage bug.****butterfly—**

- European, remedies, (28) 59.
- notes, (26) 857; (36) 254.
- southern, notes, (28) 554.
- studies, (40) 656.

by-products of fermentation, (39) 412.**calcium cyanamid for, (31) 524.****club root—**

- effect on ash content of roots, (26) 54, 143.
- effect on crucifers, (33) 648.
- in South Africa, (29) 846.
- notes, (26) 447, 844; (31) 148; (32) 48; (33) 647; (34) 241, 842; (36) 541; (37) 550, 551.
- reduction of tellurium salt by, (31) 826.
- studies, (31) 642; (37) 454; (40) 50.
- susceptibility of cruciferous plants to, (28) 547.
- treatment, (29) 752; (31) 842; (33) 848; (35) 48, 150, 245, 453, 546; (37) 150, 248; (38) 646.
- composition as affected by irrigation, (28) 332.
- creamed, food poisoning due to, (31) 855.

Cabbage—Continued.

- critical period of growing season, (39) 811.
 culture, (26) 393; (29) 338, 639; (32) 337; (33) 238;
 (35) 36; (37) 143; (39) 140, 345.
 culture—
 experiments, (27) 430; (28) 740; (29) 331; (32)
 132; (34) 636; (35) 141; (38) 40, 241.
 for forage, (31) 829; (33) 34.
 in California, (33) 537.
 treatise, (37) 543.
 digestion coefficients, (39) 171.
 disease resistance in, (29) 646.
 diseases, (39) 52, 147.
 diseases—
 description and treatment, (27) 249; (38) 850.
 notes, (27) 45; (28) 148; (38) 648; (39) 52, 147.
 studies, (26) 546; (28) 844.
 dried, antiscorbatic properties, (40) 172.
 effect on following crop, (40) 623.
 electroculture, (28) 326; (40) 428.
 extract, red, as an indicator, (30) 313.
 fertilizer experiments, (26) 630, 631; (28) 236, 735,
 740, 816; (31) 36; (33) 326; (34) 532, 833; (35)
 629; (36) 839; (39) 745.
 field, varieties, (27) 32.
 flower beetle, notes, (27) 457.
 Fusarium disease, relation to temperature, (33)
 346.
 green manuring experiments, (39) 31.
 growth as affected by sulphur, (32) 724.
 hardening by exposure to cold, (40) 26.
 hybridization experiments, (30) 329.
 hybrids, inheritance in, (29) 638.
 improvement, (28) 639.
 insects affecting, (26) 59, 553; (29) 338; (32) 753;
 (35) 55; (38) 459; (39) 661.
 intumescences on, (39) 355.
 irrigation experiments, (28) 131, 134, 135; (31) 732.
 irrigation on sandy soil, (33) 287.
 leaf spot, notes, (37) 551.
 leaves, feeding and fertilizing value, (39) 628.
 leaves, fermenting power, (31) 413.
 liming experiments, (39) 745.
 looper larvae on artichoke, (40) 58.
 looper, notes, (33) 352; (38) 154.
 losses in cooking, (28) 460.
 maggot—
 notes, (26) 59; (29) 158; (36) 456, 457.
 on radish, (39) 362.
 parasites of, (33) 861, 862.
 remedies, (26) 256; (27) 340; (28) 555; (30) 654
 (31) 352, 654; (35) 53; (36) 657; (37) 764.
 studies, (33) 58; (35) 855.
 moth, small, in South Africa, (39) 561.
 mulching experiments, (35) 344.
 mulching v. clean culture, (33) 534.
 palm, of Madagascar, (27) 766.
 planting experiments, (28) 236.
 pollination experiments, (35) 342.
 preservation, (38) 266.
 purin content, (40) 205.
 radish hybrid, description, (31) 236.
 resistance to club root, (33) 52.
 root fly, parasites of, (33) 861, 862.
 Savoy, carbohydrates of, (33) 310.
 Savoy, monstrosities of germination in, (32) 825.
 seed—
 bed, sand for, (35) 141.
 bed, screening, (26) 599.
 disinfection experiments, (31) 738.
 growing in Canada, (34) 635.
 production, (33) 226.
 production and harvesting, (34) 232.
 studies, (39) 841.
 treatment, (39) 238.
 sprayed, arsenic on, (38) 55.
 stem rot, notes, (34) 241.
 storage, (39) 770.
 storage experiments, (38) 344.
 storage house, description, (26) 45.
 sulphur in, (31) 817.
 tokras disease, notes, (38) 351.
 tomato graft, notes, (35) 341.
 utilization of sugar by, (36) 125.
 variation in, (28) 639.
 varieties, (26) 631; (27) 736; (28) 539, 740; (29) 41;
 (31) 829; (32) 834; (34) 146, 833; (35) 141; (36)
 237; (37) 645, 832; (38) 41.
 varieties resistant to Fusarium, (31) 446; (33)
 346; (36) 248.

Cabbage—Continued.

- varieties resistant to rot, (33) 344.
 variety tests, (40) 638.
 vitamin content, (40) 564.
 water requirement, (32) 127.
 watering, continuous, (37) 543.
 webworm, imported, studies, (27) 159.
 webworm, notes, (30) 660.
 winter storage in Holland, (26) 45.
 worm—
 imported, notes, (31) 649.
 imported, remedies, (38) 860.
 in Maryland, (38) 154.
 notes, (29) 652; (36) 254.
 remedies, (26) 250, 561; (33) 555; (39) 659.
 yellows—
 control, (34) 542; (37) 150.
 resistant strains, (36) 845.
 studies, (35) 544; (36) 248; (40) 156.
 Cabuya—
 binder twine from, (27) 534.
 fiber, strength of, (29) 313.
 Cacao—
 abnormal growths, (40) 249.
 algal disease, notes, (32) 445; (40) 851.
 algal diseases, studies, (38) 758.
 analyses, (38) 8.
 and woodpeckers, (40) 254.
 animal pests of, (30) 246.
 ant, black, studies, (39) 156.
 aphis, notes, (37) 662.
 bark beetles affecting, (30) 660.
 bean husks, analyses, (33) 759.
 beetle, notes, (35) 254.
 beetle, trapping, (26) 759.
 black pod, notes, (31) 645.
 brown rot, notes, (36) 746.
 budding and grafting experiments, (34) 740;
 (35) 344.
 butter—
 detection, (29) 613.
 digestion and absorption, (34) 257.
 refractive index, (27) 615.
 cake for cows, (38) 477.
 cake, toxicity, (38) 477.
 canker—
 notes, (29) 248; (32) 445, 548.
 studies, (27) 751; (31) 54, 242, 347, 750.
 treatment, (30) 543; (39) 152.
 cercopid pest, (40) 860.
 character and habits, (35) 730.
 characteristics, (36) 642.
 culture, (27) 844; (30) 644; (35) 145; (39) 544, 846;
 (40) 158.
 culture—
 and curing, manual, (26) 47.
 experiments, (31) 637, 638; (32) 745; (33)
 536, 738; (35) 647; (36) 141, 343, 537, 642;
 (37) 144; (38) 749, 845; (39) 143; (40) 339.
 in Bahia, (33) 240.
 Dutch East Indies, (30) 697.
 Grenada, (31) 48.
 Guiana, (31) 391.
 Hawaii, (38) 842.
 Philippines, (35) 353; (38) 8.
 Samoa, (31) 142.
 Uganda, treatise, (30) 741.
 Venezuela, (31) 637.
 treatise, (28) 542.
 dieback, notes, (36) 550.
 diseases, (39) 146, 151, 544.
 diseases—
 and pests in Ecuador, (40) 158.
 in Grenada, (34) 841.
 Gold Coast, (37) 349.
 Jamaica, (34) 349; (35) 458.
 Philippines, (35) 353.
 Uganda, (34) 540; (35) 45.
 West Indies, (37) 452.
 notes, (26) 51; (27) 751; (28) 443, 545; (29)
 155, 345, 547, 749; (30) 246; (31) 142, 347,
 540; (32) 340, 345; (33) 241; (36) 46, 347; (40)
 155, 252.
 studies, (33) 549.
 treatment, (26) 145; (27) 750.
 enzymes, (35) 414.
 fermentation, (30) 614; (38) 8.
 fermentation, treatise, (30) 712.

Cacao—Continued.

- fertilizer—
 - and mulching experiments, (29) 42.
 - and shading experiments, (29) 746.
 - experiments, (27) 242, 541, 645; (30) 444, 741; (31) 421; (32) 45, 838; (33) 738; (34) 344, 438; (35) 344, 647; (36) 141, 537; (37) 144, 345, 648; (39) 143.
- flowers, development of female sexual organs in, (32) 235.
- fungus diseases affecting, (26) 851.
- green manure crops for, (34) 344.
- green manuring experiments, (30) 741.
- handbook, (39) 448.
- hulls, analyses, (30) 466.
- husks for cows, (36) 76.
- improvement, (28) 736.
- industry—
 - in West Indies, (34) 438.
 - statistics, (26) 542; (38) 347.
 - treatise, (30) 533.
- insects affecting, (26) 354, 553; (27) 53, 857; (28) 249; (29) 653; (30) 246, 546, 752; (31) 142; (32) 340; (33) 153, 241, 555; (34) 349, 549, 652, 851; (35) 353, 463; (36) 457; (37) 560; (38) 461; (39) 151, 256, 544, 556, 557, 656.
- leaf disease, notes, (34) 56.
- leaf spot, description, (37) 755.
- meal, analyses, (31) 467.
- mealy bug, studies, (39) 156.
- moth, parasites of, (29) 855.
- moth parasites, rearing and liberating, (34) 855.
- mulching experiments, (30) 741.
- pests in Belgian Congo, (39) 256.
- pink disease, studies, (37) 52.
- pod disease in Philippines, (37) 148.
- pod rot, notes, (39) 752, 849.
- preparation, (29) 340; (30) 614, 712.
- products—
 - analyses, (39) 612.
 - treatise, (29) 312.
 - use by prehistoric Americans, (38) 167.
- root disease—
 - notes, (27) 445.
 - studies, (33) 448.
 - treatment, (31) 549.
- root diseases—
 - in Lesser Antilles, (37) 454.
 - notes, (26) 245; (28) 149.
- rot, notes, (31) 242.
- selection experiments, (32) 235, 236; (37) 745.
- selection studies, (39) 243.
- shell—
 - dust, analyses, (32) 32.
 - estimation, (40) 612.
 - meal, analyses, (39) 773.
 - separation and uses, (39) 809.
- shells—
 - analyses, (33) 71, 870; (35) 128.
 - as feeding stuff, (38) 368.
 - composition and digestibility, (32) 666.
 - detection in cocoa, (26) 111; (27) 809; (30) 413.
 - determination, (32) 298.
 - determination in cacao preparations, (29) 205, 611.
 - digestibility, (30) 862; (31) 766.
 - feeding value, (26) 468.
 - for dairy cows, (28) 371.
- shield budding, (30) 644.
- spraying experiments, (30) 750; (34) 50; (39) 652.
- sunstroke or apoplexy, notes, (30) 50.
- thrips—
 - fungus, trials, (38) 57.
 - notes, (35) 254, 357; (36) 550; (37) 357, 461, 652; (40) 856.
 - parasite of, (39) 158.
 - studies, (28) 353.
- tolerance for salt, (27) 824.
- treatise, (32) 235, 745.
- trees, grafted, yield data, (34) 438.
- witches' broom, notes, (29) 851; (36) 149, 846; (37) 838.
- witches' broom, studies, (34) 848.
- yield data, (40) 43.

Cachexia—

- of ovines, notes, (28) 782.
- osseous and verminous, in equines, (36) 779.

Cacoecia—

- argyrospila, *see* Fruit tree leaf roller and Archid.
- argyrospila.
- conflictana, notes, (40) 456.
- costana, habits and remedies, (29) 758.
- lambertiana n. sp., description, (33) 748.
- piceana, notes, (34) 855.
- responsana, notes, (27) 57.
- Cactaceae, studies, (32) 429; (33) 221.
- Cacti—*see also* Opuntia and Echinocactus.
- accumulation and destruction of acid in, (34) 730.
- acidity and gas interchange in, (30) 429; (35) 222.
- adaptability to dry climates, (26) 529.
- analyses, (32) 166, 769; (33) 70.
- analyses and digestibility, (33) 766.
- analyses and feeding value, (31) 265.
- as emergency forage, (27) 569.
- as human food, (33) 64.
- as stock food, (33) 70.
- behavior under cultural conditions, (30) 336.
- carbohydrate metabolism, (40) 29, 30, 223.
- carbohydrates of, (27) 9.
- culture, (31) 137.
- culture and use, (27) 569.
- culture experiments, (36) 332.
- culture in Michigan, (38) 222.
- culture in southern Texas, (33) 134.
- desiccation and starvation experiments, (34) 430.
- destruction, (27) 36; (33) 134.
- destruction in Australia, (26) 551; (33) 233; (34) 530.
- diseases—
 - in Queensland, (34) 543.
 - notes, (26) 551; (28) 342, 645.
 - studies, (27) 352.
- distribution, (34) 430.
- distribution in relation to soil temperature and moisture, (36) 733.
- edible, of New Mexico, (28) 860.
- ensiling, (33) 70.
- for cattle, (31) 77; (32) 769; (33) 766; (38) 571, 774.
- host plant of fruit fly, (26) 758.
- induced plant parasites of, (26) 433.
- insects affecting, (27) 357, 453; (28) 342, 451; (34) 549; (35) 55; (38) 257.
- ornamental, culture and value, (28) 342.
- physiological studies, (37) 524.
- reversion in, (31) 523.
- root habits, (26) 729.
- root systems, (30) 827; (39) 29.
- seasonal movements in, (35) 27.
- studies, (26) 35, 529.
- symptomology and morphology, (27) 352.
- transpiring power, (35) 733.
- use, (33) 134, 233.
- use as fertilizer, (33) 25.
- value for milk and meat production, (28) 169.

Cactus—

- experimental station at Dulacca, (33) 233.
- fruits, analyses, (40) 763.
- giant, behavior of excised branch of, (35) 820.
- giant, flowers of, (34) 430.
- growth—
 - and colloid hydration, (34) 34.
 - in relation to light and temperature, (33) 128.
- metabolism, and imbibition, (38) 729.
- rate and course of, (40) 30.
- leaves, analyses, (33) 65.
- midge, notes, (28) 451; (33) 252.
- narcotic, studies, (34) 336.
- opuntia, culture and uses, (31) 134.
- parasitic on cactus, (39) 148.
- polar bear, description, (37) 434.
- products, analyses, (31) 461.
- scale, notes, (35) 54.
- slabs, analyses, (36) 173.
- solution as an adhesive for arsenical sprays, (32) 557.
- spineless—
 - analyses, (28) 464; (38) 368.
 - breeding experiments, (32) 742.
 - culture experiments, (30) 632; (31) 829.
 - diseases, (39) 149.
 - feeding value, (38) 168.
 - for Arizona, (31) 228.
 - for cows, (36) 173.
 - for lambs, (36) 170.
 - notes, (27) 35.

- Cactus—Continued.
 spineless—Continued.
 resistance to cold, (38) 23.
 selection experiments, (33) 231.
 weevils, notes, (29) 562.
 Cacus oecanthi, notes, (31) 650.
 Cadaba juncea, analyses and digestibility, (32) 167.
 Cadaverin as a source of ammonia, (29) 723.
 Caddice flies. Imnephilid, classification, (35) 853.
 Caddis-fly, life history and habits, (26) 561.
 Cadelle—
 notes, (26) 453; (30) 655.
 remedies, (27) 258.
 Cadmium—
 assimilation by *Aspergillus niger*, (31) 224.
 chlorids, effect on starch ferments, (27) 109.
 oxid, effect on germination of seeds, (29) 528.
 sulphate, antiseptic value, (40) 779.
 Caenocryptus newcomeri n.sp., description (38) 565.
 Caecoma—
 dubium n.sp., description, (34) 539.
 euonymi, notes, (37) 550.
 interstitiale and *Puccinia peckiana*, relation, (40) 155.
 laricis, notes, (29) 554.
 makinoi, notes, (26) 343.
 nitens, notes, (37) 457.
 pseudotsugae douglasii, n.var., studies, (31) 246.
 Caesium—
 chlorid, fertilizing value, (30) 627.
 determination in plant ash, (38) 412.
 effect on *Aspergillus niger*, (28) 527.
 in plants, (38) 409.
 in solids, (31) 720.
 salts, effect on saccharification of starch, (26) 309.
 sulphate, effect on plants, (28) 527.
 Cafeterias, handbook, (40) 560.
 Caffaro paste, effect on germination of wheat, (30) 837.
 Caffeine—
 cleavage in the human body, (27) 272.
 determination, (27) 499; (32) 298.
 determination in—
 cocoa and chocolate, (37) 312.
 coffee, (40) 115.
 coffee and tea, (35) 504.
 effect on—
 gastric secretion, (26) 466.
 heat production, (37) 266.
 mental and motor efficiency, (29) 265.
 plant growth, (37) 632.
 seeds, (27) 330.
 uric acid excretion, (37) 470.
 working power of men, (39) 68.
 elimination—
 and toxicity, (29) 265.
 studies, (27) 464.
 extraction with ether, (37) 414.
 for action and distribution by plants, (26) 823.
 in beverages, (31) 164, 358.
 in Java tea, (34) 166.
 isomer of, (40) 202.
 methods of analysis, (33) 414.
 role in cardiac action of coffee, (27) 767.
 substances, action of, (33) 464.
 toxicity, (27) 166; (28) 662; (35) 473.
 Caffeols, origin, (29) 361.
 Caffetannin, notes, (29) 434.
 Cajanus—
 culture experiments, (28) 633.
 indicus—
 analyses, (31) 863; (38) 368.
 analyses and digestibility, (28) 464.
 culture experiments, (28) 136; (36) 830.
 germinating, enzymes of, (38) 9.
 oil content of seeds, (27) 716.
 seeding experiments, (37) 826.
 selection experiments, (38) 635.
 Cake and corn feeding, manurial value, (40) 824.
 Cakes—
 artificial coloring, (28) 510.
 making, (33) 695.
 making, principles of, (31) 299.
 oven temperature for, (33) 565.
 Caladiums—
 culture experiments, (40) 434.
 varieties, (31) 524; (35) 134; (38) 526.
 Calafatite deposits in Spain, (26) 728.
 Calamagrotis canadensis, fungus disease of, (26) 646.
 Calamistis fusca, studies, (39) 158.
 Calamondin as a stock for cultivated citrus, (32) 143.
 Calandra—
 granaria, see Granary weevil.
 oryza, see Rice weevil and Wheat weevil.
 Calaphis—
 n.spp., descriptions, (36) 357.
 synopsis, (36) 357.
 Calaveras Dam slide, (40) 188.
 Calcareous—
 deposits from rivers and lakes, analyses, (38) 626.
 marl, use in agriculture, (40) 816.
 Calceolaria rugosa, carotinoid content, (31) 803.
 Calcifarin, use in bread making, (31) 357.
 Calcineter, description, (34) 503.
 Calcite, fertilizing value, (40) 815.
 Calcium—
 absorption in the body from milk, (27) 168.
 aluminum silicate, fertilizing value, (28) 521.
 and sodium chlorids, antagonism between, (33) 31.
 and strontium, separating and identifying, (26) 21.
 arsenate—
 analyses, (38) 643.
 as a spray, (37) 759.
 fungicidal value, (39) 652.
 insecticidal value, (34) 60, 250; (40) 164.
 preparation, (40) 10.
 v. lead arsenate, (33) 339, 340; (39) 256, 767.
 arsenates, studies, (39) 310, 311, 359.
 arsenite—
 and arsenate as insecticides, (39) 712.
 insecticidal value, (27) 500.
 preparation and properties, (28) 308.
 as growth stimulant for hemp, (33) 432.
 behavior during meat digestion, (28) 665.
 borate, effect on crops, (39) 429.
 bread, notes, (31) 860.
 carbide—
 for heating and lighting, (38) 190.
 fungicidal value, (40) 750.
 industry, statistics, (26) 725.
 carbonate—
 availability, determination, (38) 819.
 chemical effects on soil, (40) 124.
 composition and solubility, (36) 713.
 determination in limestones, (34) 503.
 determination in soils, (27) 610.
 carbonate, effect on—
 alkali salts, (39) 721.
 ammonia absorbing power of soils, (30) 425.
 ammonia fixing power of soils, (27) 322.
 ammonification, (39) 721.
 availability of soil potash, (32) 126.
 development of *Digitalis purpurea*, (34) 135.
 hydrogen-iron concentration in soils, (39) 425.
 legume bacteria, (29) 733.
 nitrification, (40) 723.
 nitrification in soils, (28) 217.
 nitrification of ammonium sulphate, (26) 722.
 nitrogen fixation by *Azotobacter chroococcum*, (33) 427.
 nitrogen transformation, (26) 226; (28) 523.
 oxidation of sulphur in soils, (30) 223.
 phosphate reversion, (39) 521.
 phosphates, (26) 428, 52; (27) 726; (34) 421; (35) 816.
 plant growth, (36) 22.
 protein content of soy bean, (34) 141.
 soil molds, (40) 123.
 soil potash, (36) 625.
 soils, (27) 622; (39) 821.
 solubility of calcium and phosphoric acid, (39) 23.
 solubility of iron phosphate, (37) 324.
 strawberries, (34) 150.
 strawfying power of soils, (37) 120.
 superphosphate, (36) 325, 821; (39) 119.
 wine, (29) 117.
 carbonate—
 fertilizing value, (30) 127.
 fixation in soils, (31) 25.

Calcium—Continued.

carbonate—continued.

- formation by bacteria, (26) 618.
- from causticizing plant, analyses and fertilizing value, (31) 125.
- loss from cultivated soil, (30) 817.
- methods of analysis, (29) 311.
- relation to chlorosis, (28) 242, 425, 623; (33) 520.
- role in assimilation of ammonia, (36) 631.
- waste, use against finger-and-toe disease, (35) 522.

caseinate, basic, preparation, (29) 10.

chlorid—

- absorption by plants, (35) 435.
- as coagulant for rubber latex, (26) 141.
- as dust preventive, (32) 884.

chlorid, effect on—

- action of trypsin, (26) 159.
- activity of malt diastase, (29) 528.
- ammonia fixing power of soils, (27) 323.
- concrete, (36) 286.
- disease resistance in animals, (32) 373.
- germination and growth of crops, (34) 125.
- germination of seeds, (29) 327.
- growth of rice, (30) 833.
- moor soils, (35) 724.
- permeability of protoplasm, (33) 328.
- physical properties of soils, (39) 215.
- roads, (30) 486.
- seed germination, (26) 131.
- strength of concrete, (30) 589.

chlorid—

- for calves and pigs, (30) 67.
- for pigs, (27) 872.
- purification of water by, (26) 214; (27) 512.
- relation to ammonification and concentration of soil solution, (39) 323.
- use in bread making, (29) 565; (31) 357.

compounds, effect on plant growth, (35) 726.

content of cucurbit vines, (39) 747.

cyanamid—

- action as affected by iron, (27) 500.
- after-treatment, (36) 425.
- ammonia from, (31) 822; (38) 516.
- analyses, (32) 32.
- application, (31) 518.
- application to winter grain, (33) 125.
- as affected by carbon dioxide, (32) 125.
- herbicide for Cuscuta, (26) 44.
- retarder of denitrification, (34) 219.
- top-dressing for oats, (35) 519.
- top-dressing for rye, (28) 626.
- availability of nitrogen in, (35) 426.
- catalysis, (32) 125.
- change of in soils, (26) 425; (39) 522.
- decomposition, (27) 624.
- decomposition in presence of water, (36) 426.
- destruction of wild mustard by, (27) 724.
- detection, (26) 804.

cyanamid, effect on—

- composition of beets, (31) 737.
- decomposition of soy bean fodder, (40) 214.
- germination of cereals, (33) 818.
- germination of dodder, (27) 28.
- soils, (27) 625.
- sugar beets, (33) 434.
- superphosphate, (30) 26.
- the eye, (31) 29.

cyanamid—

- eradication of weeds by, (26) 839.
- experiments, review and bibliography, (27) 128.
- fertilizing action in relation to soils, (34) 820.
- fertilizing value, (26) 125, 233, 323, 324, 425, 525, 536, 537, 622, 630, 725, 818, 837; (27) 218, 336, 337, 519, 625, 626, 832, 833; (28) 521, 723, 817; (29) 23, 125, 127, 213, 831; (30) 125, 427, 626, 627, 632, 731, 822, 835; (31) 36, 37, 124, 517, 518, 524, 725, 732, 820; (32) 336, 831, 832; (33) 219, 624; (34) 22, 24, 25, 130, 219, 431, 518, 622, 820; (35) 22, 126, 218, 323, 325, 336, 427, 518, 519, 629, 630; (36) 232, 332, 427, 818, 833; (37) 23, 216, 426, 539, 540, 815; (38) 516; (40) 539.

for peat soils, (39) 428.

for summer crops, (37) 217.

formation and decomposition, (26) 33.

formation from free nitrogen, (32) 217.

granular, fertilizing value, (39) 116.

Calcium—Continued.

cyanamid—continued.

- granulated, manufacture, (35) 22.
- in mixed fertilizers, (33) 25.
- industry in various countries, (32) 820.
- industry, status, (27) 128, 519; (30) 125.
- injurious action, (37) 815.
- lessening dusty conditions of, (30) 26.
- loss of nitrogen in, (27) 824.
- manufacture, (34) 622.
- manufacture and use, (27) 520; (35) 428.
- manufacture, progress in, (29) 730.
- methods of analysis, (26) 109, 606, 804.

cyanamid, mixing with—

- coal tar, (38) 725.
- pulverized bog iron ore, (35) 126.
- superphosphate, (29) 24; (31) 822.
- Thomas slag and kainit, (31) 422.

cyanamid—

- nitrites in, (32) 217.
- oiled, fertilizing value, (31) 422.
- paper on, (32) 121.
- preparation and properties, (26) 525.
- production, (28) 817; (31) 321, 725; (39) 825.
- production and use, (29) 126, 213, 517; (30) 126; (32) 425.
- solubility in water, (31) 725.
- spoiled, effect on oats, (40) 815.
- storage, (34) 724; (36) 426.
- studies, (29) 127.
- time of application, (30) 125.
- trade in, (31) 29.
- transformation in soils, (27) 625.
- transformation in storage, (27) 624.
- transformation into ammonia, (31) 725.
- use, (32) 323; (36) 427.
- use against Colaspidea atrum and dodder, (29) 561.
- use against nematodes, (37) 453, 652.
- use against weeds, (31) 532; (35) 340.
- use against wild mustard, (31) 524, 633, 739.
- use in Austria, (28) 723.
- valuation, (36) 426.

deficiency, effect on oat plant, (40) 324.

determination, (32) 714; (34) 712; (36) 112; (39) 311.

determination—

- as oxalate, (32) 504.
- as tungstate, (32) 116.
- filter for, (38) 506.
- in ash, (29) 610; (36) 317, 613.
- blood and milk, (37) 207.
- foods, (29) 809.
- plants, (29) 797.
- presence of magnesium, (26) 205.
- presence of manganese, (27) 503.
- presence of phosphoric acid and iron, (36) 14.
- solids and fluids from animal organism, (33) 713.
- urine and feces, (34) 508.
- urine and other physiological fluids, (30) 210.
- water, (35) 805.

effect on—

- Aspergillus niger, (26) 431.
- coagulation of milk, (33) 674.
- concrete sand, (34) 787.
- growth and composition of bone, (32) 465, 764.
- herbaceous plants, (33) 428.
- lupines, (34) 724.
- soils, (32) 33.
- toxicity of salts in nutritive solutions, (29) 322.

excretion as affected by lecithin, (26) 766.

excretion in the dog, regulation, (37) 64.

fed pregnant swine, effect on offspring, (32) 366.

feed analyses, (31) 864.

fluosilicate, fertilizing value, (29) 823.

for horses, (30) 571.

function in plants, (30) 523.

hypo-chlorite—

- antiseptic and germicidal value, (37) 176.
- as a seed sterilizer, (35) 46.
- effect on bacteria in water, (38) 489.
- effect on glanders bacillus, (40) 478.
- purification of water by, (32) 87, 786.
- purifying action on water, (36) 889.
- sterilization of milk bottles with, (27) 232.

Calcium—Continued.**hypochlorite—continued.**

sterilization of water by, (33) 883; (37) 588.
use against apple scab, (37) 755.

hyposulphite, fungicidal value, (39) 349.

importance in animal nutrition, (31) 663; (33) 758.

in Asiatic foodstuffs, (29) 64.

blood of lactating cows, (37) 308.

feeding stuffs, (30) 867.

normal urine, (36) 366.

nutrition of plants, animals, and man, (40) 767.

soil, (36) 621.

soil, solubility, (39) 24, 821.

the diet, (31) 357, 860.

inorganic, in milk, (37) 208.

loss in drainage water, (26) 421.

magnesium ratio in the diet, (29) 565.

metabolism—

in dogs, (38) 569.

14-year-old boys, (30) 262.

infants, (29) 166.

women, (40) 174.

index of, (32) 858.

studies, (39) 875, 876.

nitrate—

analyses, (32) 424.

assimilation by mold fungi, (29) 29.

availability of nitrogen in, (35) 426.

nitrate, effect on—

assimilation of phosphates, (29) 318.

germination of dodder, (27) 28.

nitrogen-assimilating bacteria, (38) 724.

nodule formation, (37) 133.

phosphorite, (29) 624.

plants, (28) 527.

sugar beets, (33) 434.

toxic salts, (30) 31.

weed growth in meadows, (38) 141.

wheat seedlings, (31) 426.

nitrate—

fertilizing value, (26) 233, 324, 425, 525, 536,

622, 630, 631, 725, 837; (27) 24, 336, 337, 519,

626, 724, 832, 833, 837; (28) 521, 723, 817, 827;

(29) 23, 125, 213, 423, 829; (30) 626, 627, 632,

637, 835; (31) 124, 517, 518, 732, 820, 821;

(32) 336, 532, 832; (33) 25, 219; (34) 130, 518,

622; (35) 22, 218, 323, 336, 427; (36) 134, 232,

626, 833; (37) 426, 739; (39) 423, 537.

for arid soils, (36) 726.

corn, (31) 831.

mangels, (29) 830.

peat soils, (39) 428.

hygroscopicity, (26) 425.

in nutrient solutions, effect on plant growth,

(39) 28, 331.

industry in various countries, (32) 820.

manufacture, (28) 221.

manufacture in the South, (27) 824.

manufacture, progress in, (29) 730.

methods of analysis, (26) 606.

mixing with superphosphate, (29) 214.

nitrogen assimilation from, (27) 331.

preparation and properties, (26) 525.

production and use, (29) 126, 213; (30) 126;

(32) 425.

production in 1912, (28) 817.

relation to ammonification and concentra-

tion of soil solution, (39) 323.

trade in, (31) 29.

treatment with oil, (29) 214.

use in Austria, (28) 723.

valuation, (26) 606.

nitrite, fertilizing value, (28) 723; (29) 331; (31)

821; (33) 219.

of cow's milk, effects in infant feeding, (40) 661,

869.

of vegetables, utilization in the diet, (39) 876.

output, urinary and fecal, in normal men, (36)

365.

oxalate, origin and function in plants, (27) 133;

(39) 827.

oxid—

chemical effects on soils, (40) 124.

conversion in soil, (40) 622.

determination in peat soils, (35) 716.

diffusion in soils, (29) 128.

effect on availability of soil potash, (32) 126.

on physical character of soils, (40) 622.

v. calcium carbonate, (40) 515.

Calcium—Continued.

paracaseinate of cow's and goat's milk, cleav-

age, (27) 12.

phosphate—

citrate solubility, (37) 713.

decomposition by acetic acid, (36) 712.

determination, (32) 409.

diffusion in soils, (29) 128.

phosphate, effect on—

composition of milk, (34) 270.

germination of seeds, (29) 328.

sugar content of cane, (38) 230.

phosphate—

fertilizing value, (26) 622; (27) 342.

in animal nutrition, (29) 869.

in rations of domestic animals, (32) 566.

in vicinity of Monterey, Mexico, (36) 821.

manufacture from milk, (30) 378.

precipitated, fertilizing value, (31) 823.

solubility and assimilability, (40) 128.

solubility in ammonium citrate solution,

(33) 412.

physiological action, (27) 229.

physiological functions in plants, (29) 528.

potassium permittive, fertilizing value, (29) 211.

pyrophosphate as a fertilizer, (30) 222.

relation to plant nutrition, (37) 631, 799.

removal from soils, (39) 517.

resorption and retention by the intestine, (28)

865.

retention by pigs, (28) 469; (29) 66.

rôle in forest vegetation, (32) 728.

rôle in germination, (39) 526.

salts—

absorption by plants, (35) 433.

as a factor in onset of labor, (34) 184.

as affected by Bulgarian ferment, (26) 203

salts, effect on—

action of phosphoric acid, (27) 623.

activity of lipase, (31) 264.

Aspergillus niger, (28) 824.

canned foods, (34) 67.

fowls, (39) 177.

generation of trypsin, (29) 662.

nitric-nitrogen accumulation, (40) 722.

nodule production in vetch, (32) 727.

plants, (32) 538.

root hairs, (38) 330.

soil bacteria, (38) 818.

solubility of phosphates, (36) 626.

salts—

flocculating power on clay, (27) 620.

rôle in nutrition, (40) 273.

toxicity in soil, (36) 515.

separation from barium and strontium, (26) 204.

separation from magnesium, (28) 409; (33) 412.

sources for growing pigs, (31) 268.

sulphate, *see* Gypsum.

sulphid—

effect on soil microorganisms, (31) 27.

soil treatment with, (40) 619.

sterilization of soils by, (32) 816.

sulphite—

fertilizing value, (29) 521.

insecticidal value, (31) 408.

solubility in sugar solutions, (38) 616.

solubility in water and sugar solutions, (36)

716.

tetraphosphate, fertilizing value, (39) 427, 428.

thioarsenate, fungicidal value, (30) 712.

toxicity toward plants, (30) 128.

translocation in soils, (40) 719.

use in bread making, (32) 161.

Calendula officinalis, adventitious buds, (36) 837.

Calometer, description, (33) 367.

Calf—

barns, ridding of flies, (26) 861.

diphtheria, notes, (31) 879.

diseases, immunization, (26) 578.

diseases, notes, (36) 773.

dysentery, immunization, (29) 581; (32) 582.

dysentery, treatment, (29) 680.

feeds, analyses, (29) 467.

meals—

analyses, (27) 670; (29) 769; (30) 67, 169; (40)

571, 665.

preparation and analyses, (34) 667.

tests, (39) 76.

pneumonia bacterium, opsonic power of serums

against, (27) 285.

stanchions, notes, (32) 590.

Caliche—

- composition, (35) 511.
- studies, (39) 730.

Calidea apicalis, injurious to cotton, (27) 454.

California—

- College, cooperation with schools, (26) 192.
- College, organization and scope, (29) 191.
- Fruit Growers' Exchange, report, (32) 287.
- Redwood Park, booklet, (29) 44.
- Station—
 - notes, (26) 395; (27) 197, 397, 696, 799; (28) 93; (29) 96; (30) 396, 698; (31) 99, 397, 695, 795; (32) 395; (33) 496, 794; (35) 196; (36) 397, 796; (37) 496; (38) 797; (39) 95, 694; (40) 495, 695, 798.
 - publications, (40) 599.
 - report, (32) 290; (34) 294; (36) 195; (38) 197; (40) 599.
 - report of director, (29) 899.

University—

- agricultural education at, (40) 599.
- Farm School at Davis, announcement, (27) 491.
- notes, (26) 395, 796; (27) 197, 696, 799; (28) 93, 396, 696; (29) 96; (30) 396, 698, 900; (31) 99, 397, 695, 795; (32) 395; (33) 496, 794; (34) 295, 600; (35) 95, 196, 798; (36) 397, 796; (37) 496, 600, 700, 797; (38) 797; (39) 95, 197, 694; (40) 495, 600, 695, 798.
- School of Tropical Agriculture, (40) 294.

Caligonus—

- malli n.sp., description, (38) 63.
- terminalis, notes, (28) 457.

Calipers—

- chest contour, (40) 277.
- circular area, notes, (28) 440.
- for measuring cattle, (40) 872.

Caliroa, *see* Eriocampoides.

Calisto archebates—

- introduction into Porto Rico, (39) 58.
- notes, (36) 754.

Calla lily pollen, parasite of, (31) 641.

Callas, phyllody of corolla in, (34) 143.

Callicratides rama, notes, (34) 652.

Callidryas eubule, notes, (27) 559.

Calliophialtes—

- sp., in California, (31) 256.
- sp., parasitic on codling moth, (30) 360.
- thurberiae n.sp., description, (34) 363.

Callimome n.spp., descriptions, (28) 162.

Callimomidae of Australia, (39) 154.

Calliphora—*see also* Blow flies.

- erythrocephala—
 - "critical" point for, (36) 265.
 - destruction by heat, (28) 752.
 - hibernation, (34) 254.
 - notes, (28) 255; (30) 458, 459.
- spp., development, (31) 456.
- spp., hibernation, (38) 262.
- viridescens, notes, (26) 147.

Calliphorine cutaneous parasites of domestic animals, (27) 656.

Callipterinella annulata, notes, (37) 562.

Callipterus—

- bellus, notes, (35) 56.
- trifolii, studies, (32) 247.

Callirhoe spp., food plants of cotton boll weevil, (31) 458.

Callopatristia floridensis—

- notes, (28) 854; (34) 158; (36) 355; (38) 358.
- studies, (29) 854.

Callosamia promethea, notes, (30) 655.

Callose, occurrence in root hairs, (29) 326.

Callosities, inheritance in horses, (26) 571.

Callospermophilus—

- (Citellus) chrysoideirus, susceptibility to plague, (26) 59.
- lateralis caryi n.subsp., description, (37) 758.
- lateralis cinerascens, relation to spotted fever, (31) 160.
- spp., prevalence in Colorado, (28) 652.

Calluna vulgaris—

- behavior on lime soils, (31) 425.
- obligate symbiosis in, (33) 221.
- sprigs, as a substitute for black tea, (33) 866.

Calocampa—

- cineritia, notes, (35) 756.
- nupera, parasites of, (31) 752

Calocoris—

- angustatus, life history and control, (36) 857.
- rapidus affecting potatoes, (32) 57.

Calomel as a vermifuge, (38) 883.

Calonectria—

- flavida, notes, (29) 155.
- graminicola, occurrence in United States, (30) 537.
- livialis n.sp., description, (29) 445.
- studies, (30) 537.

Calophya nigripennis, life history, (40) 754.

Calophyllum inophyllum, oil of, (31) 234; (37) 109.

Caloptenus italicus—

- fungus disease affecting, (26) 247.
- notes, (31) 850.

Calorimeter—

- bomb, adiabatic device for, (34) 168.
- bomb, construction and operation, (27) 667.
- for large animals, description, (31) 764.
- for small animals, (30) 66.
- respiration, description, (39) 676.

Calorimeters, descriptions, (27) 367.

Calorimetric—

- methods, treatise, (26) 872.
- observations on man, (32) 257.

Calorimetry—

- animal, studies, (39) 772.
- bomb, corrections in, (33) 265.
- clinical, (40) 868.
- combustion, notes, (30) 466.
- of urine and feces, (26) 161.

Calosoma—

- imbricata, notes, (27) 862.
- inquisitor, notes, (35) 460.
- scrutator, notes, (28) 755.
- studies, (38) 61.
- sycephanta—

- dispersion in New England, (33) 254.
- in Florida, (37) 659.
- in Maine, (37) 459.
- life history and distribution, (35) 460.
- locomotion of larvae, (27) 360.
- studies, (26) 560.
- studies, (26) 350; (33) 457.

Calosphaeria princeps, notes, (31) 539.

Calospora vanillae, description, (27) 450.

Caloteleia sp., notes, (31) 650.

Calotermes—

- (Glyptotermes) satsumensis n.sp., description, (35) 255.
- lucifugus attacking grapes, (36) 651.

Calotropis—

- gigantea, seeds of, (32) 613.
- procera latex, rennet of, (31) 410.

Calpodex ethlius, notes, (27) 56.

Calvatia spp., effect on vegetation, (38) 222.

Calves—

- anaerobes in, (26) 586.
- as affected by pleuro-pneumonia virus, (27) 785.
- as affected by rations from single plant sources, (33) 367.
- birth weights, (37) 684.
- bone content, (31) 564.
- brains, creatin and creatinin content, (31) 760.
- calcium chlorid for, (30) 67.
- care and management, (34) 471; (35) 94.
- cost of raising, (32) 574; (38) 683; (39) 782.
- cottonseed meal for, (26) 879.
- dairy, raising, (29) 771; (34) 667; (39) 182, 882.
- dairy, rearing chart, (37) 675.
- dairy, wintering experiments, (37) 682.
- destruction by cottonseed meal, (29) 77.
- estimating age of, (31) 266; (33) 469.
- factors affecting growth, (35) 868.
- feeding and care, (28) 581; (32) 568; (33) 98; (36) 773; (37) 367, 683.
- feeding experiments, (26) 367; (27) 372, 673; (28) 572; (29) 169, 170, 277, 468, 571, 668; (30) 671; (31) 75, 866; (32) 362, 669, 672, 768; (33) 268, 269, 570, 765; (34) 180, 265, 667, 773, 774, 868; (35) 870; (36) 75, 369, 370, 565, 567; (37) 366, 675, 866, 873; (38) 69, 679, 773; (39) 71, 76, 169, 273, 382; (40) 369.
- food requirements, (34) 775.
- for veal, (39) 76.
- growth on pasture, (31) 767.
- hand feeding, (38) 773.
- hairless, (39) 187.

- Calves—Continued.
immunization against—
anthrax, (31) 82.
dysentery, (26) 682.
tuberculosis, (26) 181, 284, 380; (27) 383; (29) 884; (33) 878.
large, obstetrical aid for, (26) 277.
marketing in the South, (37) 391.
metabolism experiments, (26) 768.
milk as sole diet, (40) 767.
milk substitutes for, (33) 669.
mineral phosphates for, (33) 469.
newborn—
composition, (37) 72.
diseases of, (37) 379.
infection of, (40) 887.
mineral constituents, (27) 499.
weights, (32) 862.
parathyroid glands of, (29) 377.
preserved skim milk for, (33) 377.
profit and loss in feeding, (28) 374.
raising, (29) 571; (30) 671; (31) 299, 566.
raising—
and fattening in Alabama, (31) 169; (32) 69.
and finishing, (28) 395.
emulsion system, (29) 369.
in Hungary, (33) 269.
on skim milk, (33) 374.
range, winter feeding, (31) 468.
rations for, (30) 169.
raw v. heated milk for, (28) 775.
rennet, immunizing against, (40) 477.
sex control in, (29) 468.
skim milk and cassava meal for, (30) 768; (31) 266.
slaughtering in Great Britain, (29) 571.
slaughtering on the farm, (35) 317.
spleen, bacterial content, (39) 389.
spring, advantages of raising, (33) 570.
suckling, intestinal flora of, (35) 282.
susceptibility to tuberculosis, (26) 178.
triplet, notes, (34) 767.
triplet, studies, (28) 467.
variation in weight, (36) 566.
weight of, (33) 171.
wintering, (40) 472.
young—
digestion of starch by, (38) 874.
slaughtering, (26) 473.
sour milk for, (33) 269.
- Calycanthus—
occidentalis, volatile oil of, (36) 206.
spp., hydrocyanic acid in, (28) 429.
- Calypso-pora—
columnaris, infection experiments, (30) 745.
goeppertiana, life history, (30) 745.
- Cambium miners—
new, (37) 764.
notes, (29) 44.
studies, (33) 749.
- Cambridge University, notes, (36) 699.
- Camden chert as a road-making material, (26) 685.
- Camel—
diseases in India, (28) 482; (36) 680.
diseases, notes, (32) 134.
louse, notes, (26) 655.
- Camelidae, South American, economic importance, (27) 470.
- Camellia—
drupifera fruit, chemical study, (39) 501.
japonica, stomata of, (36) 223.
scale, notes, (28) 854.
- Camels—
in Tunis, description, (27) 571.
management in East Africa, (28) 268.
notes, (30) 599, 784.
variations in normal temperature, (37) 690.
- Camera—
lucida, installation, (35) 899.
microscopic, installation, (35) 899.
- Camnula pellucida, notes, (28) 59; (36) 153.
- Camomile flowers, chemistry of, (33) 202.
- Camp—
cookery, book on, (38) 469.
cookery, notes, (27) 463.
rations and equipment, (30) 763.
sanitation and housing, (33) 691.
- Campanula—
carpatica, segregation in, (39) 123.
leaf spot, notes, (27) 45.
medium, Sclerotinia disease of, (34) 354.
- Campers, handbook for, (34) 46.
- Camphor—
analyses, (40) 559.
blackening and dying of shoots, (30) 48.
chemistry of, (35) 317.
detection in ethyl alcohol, (29) 312.
determination, (27) 499.
diseases, new, in Texas, (37) 843.
diseases, notes, (28) 148.
effect on hyacinths and tulips, (26) 731.
from black sage, (33) 202.
from Cinnamomum camphora, (27) 442.
insecticidal value, (39) 762.
insects affecting, (31) 849.
liniment, notes, (31) 658, 676.
methods of analysis, (27) 210.
spirits of, analyses, (32) 456.
thrips, *see* Cryptothrips floridensis.
trees, culture experiments, (40) 339.
trees, growing in Florida, (37) 346.
trees, insects affecting, (29) 853.
trees of Mauritius, (37) 310.
- Camphora, nature and use, (26) 580.
- Campoletis prodeniae n. sp., description, (26) 352.
- Camponotus—
herculeanus ferrugineus, embryology, (29) 860.
herculeanus, notes, (26) 147.
maculatus turkestanicus, remedies, (31) 155.
reticulatus fullawayi n. subsp., description, (27) 264.
- Campoplex—
n. spp., descriptions, (29) 563; (30) 60.
phthorimaeae, notes, (36) 655.
variabilis n. sp., description, (34) 363.
variabilis n. sp., notes, (33) 352.
- Campsomeris dorsata, notes, (34) 455.
- Camptobrochis nitens, notes, (28) 252.
- Camptosorus rhizophyllus, studies, (33) 27.
- Campylodendria curvata, notes, (29) 252.
- Campylochaeta obscura, studies, (39) 659.
- Campylomma verbasici—
notes, (30) 359.
relation to fire blight, (33) 744.
- Canada Experimental Farms—
notes, (28) 94; (30) 599; (34) 498; (36) 600, 697.
report, (36) 97; (38) 698; (40) 797.
- Canada thistle—
control, (26) 839.
destruction, (27) 31.
eradication, (28) 834; (31) 438.
geographical distribution, (26) 335.
- Canadian—
agricultural institutions, notes, (37) 100.
Forestry Association, report, (32) 238.
Fruit Marks Act, (29) 868.
Phytopathological Society, (40) 699.
Seed Growers' Association, (28) 638, 739; (37) 141, 831.
- Canaille, acclimatization in France, (37) 220.
- Canal—
banks, blanketing, (40) 188.
banks, grass mixtures for, (28) 829.
engineering, treatise, (32) 481.
measurement, (40) 188.
- Canals—
algae control in, (40) 188.
concrete lining for, (32) 481.
excavation, estimating for, (33) 586.
frictional resistance in, (30) 885.
irrigation, *see* Irrigation.
losses from by seepage, (30) 288.
power, design, (33) 885.
silt in, (30) 588; (31) 383.
unlined, seepage from, (33) 885, 886.
- Canaries—
breeding experiments, (30) 564.
care and management, (36) 455.
hybridization, (27) 276.
- Canarium—
bengalense, methods of analysis, (27) 210.
nut milk as a food for infants, (29) 566.
nuts, microscopic identification, (28) 565.
- Canary—
disease resembling fowl cholera, (31) 879.
grass—*see also* Phalaris bulbosa.
culture experiments, (32) 431.
on bog and moss soils, (40) 212.
seed, agglutinating properties, (31) 774.
Toowomba, varieties, (30) 434.
varieties, (29) 222.

Canary—Continued.

- seed—
 - culture experiments, (37) 823.
 - production in Spain, (28) 736.
- Canavali obtusifolia, culture, (34) 736.
- Canavalia—
 - agronomic value and species, (39) 635.
- ensiformis—
 - analyses and digestibility, (28) 464.
 - anatomical structure, (31) 314.
 - as a cover crop for coconuts, etc., (33) 535.
 - composition and digestibility, (33) 267.
 - culture, (30) 335.
 - culture experiments, (28) 136.
 - culture in German East Africa, (27) 419.
 - fertilizing value, (34) 34.
 - notes, (31) 336.
 - oil content of seed, (27) 717.
 - urease content, (35) 612.
- gladiata—
 - as green manure, (32) 423.
 - culture experiments, (27) 233.
- spp., notes, (28) 838.
- Canavalin—
 - chemistry of, (37) 8.
 - studies, (40) 308.
- Cancer—
 - diagnosis, (32) 179, 372.
 - diagnosis, dialysis method, (31) 877.
 - in rats, studies, (32) 353.
 - papers on, (38) 580.
 - pathology, (31) 277.
 - relation to crown gall, (35) 545, 650; (37) 245.
 - relation to melanosis, (27) 289.
 - serum reaction, (33) 477.
- Candelilla wax, chemistry of, (26) 611.
- Candlenut oil, detection, (29) 613.
- Candlenuts, analyses, (31) 631.
- Candy—
 - adulterated, law in Michigan, (27) 767.
 - examination, (30) 664.
 - for queen cages, (27) 865.
 - handbook, (31) 856.
 - making in the home, treatise, (31) 558.
 - making, principles of, (26) 358.
 - making, treatise, (29) 60; (32) 253, 560.
 - manufacture, sanitary aspects, (34) 365.
 - notes, (28) 862.
 - sirups, cooking temperatures, (32) 762.
 - sulphurous acid in, (27) 868.
- Cane—*see also* Sugar cane.
 - analyses, (30) 565.
 - as a forage and silage crop, (31) 829.
 - beetles in Queensland, (39) 255.
 - borer beetle, studies, (36) 257.
 - borers, notes, (34) 361.
 - culture, (31) 265.
 - culture in Burma, (29) 736.
 - grub in Queensland, (32) 555.
 - irrigation experiments, (28) 588.
 - Japanese—
 - culture experiments, (27) 336; (29) 224; (30) 434.
 - fertilizer experiments, (27) 336.
 - juice, determination of acidity, (27) 814.
 - molasses, methods of analysis, (28) 713.
 - products, methods of analysis, (27) 205.
 - products, polarization, (27) 813.
 - seed chop, analyses, (28) 465.
 - silage from (27) 872.
 - sirup, manufacture, (26) 213; (30) 614.
 - stems, dorsoventral structure, (31) 233.
- sugar—*see also* Sugar.
 - as affected by ultraviolet rays, (26) 308.
 - calculation tables, (29) 113.
 - content as affected by heading, (31) 431.
 - detection in honey, (31) 208.
 - determination of specific gravity, (35) 14.
 - distillation, (36) 508.
 - effect on action of blood serum, (34) 675.
 - effect on secretion of diastase by fungi, (31) 13.
 - factories, chemical control in, (37) 509.
 - factories, germicides for, (32) 717.
 - factories, heat balance of, (30) 891.
 - formation, (28) 127.
 - formation in germinating peas, (35) 432.
 - harmful effect of, (33) 65.
 - in milk, as affected by heat, (34) 164.
 - industry in Queensland, (35) 230.
 - industry, treatise, (29) 432.

Cane—Continued.

- sugar—continued.
 - inversion, (36) 802.
 - inversion and determination, (38) 507.
 - inversion by ammonium chlorid, (30) 811.
 - manufacture, clarifiers, (37) 208.
 - manufacture, handbook, (35) 114; (38) 508.
 - raw, acidity, (28) 614.
 - raw, deterioration, (38) 805.
 - relation to mold fungi, (28) 429.
 - sirup, analyses, (34) 660.
 - solutions, osmotic pressure, (28) 262.
 - synthesis, (34) 803.
 - toxicity, (28) 462, 661.
 - v. beet sugar for fermentation purposes, (35) 718.
 - top silage and molasses for cattle, (32) 668.
 - tops, analyses, (33) 568.
 - trash ash, composition and use, (27) 727.
 - v. corn for silage, (31) 36.
- Canestriniidae, new genus, (34) 66.
- Canidia curculionis, notes, (26) 151; (27) 562.
- Canidiella curculionis, parasitic on alfalfa weevil, (31) 61.
- Canine distemper, *see* Dog distemper.
- Canis aureus, relation to canine piroplasmosis, (28) 83.
- Canker—
 - in fowls, studies, (35) 283.
 - in orchards, treatment, (29) 348.
 - notes, (36) 498.
- Cankerworm—
 - common or spring, notes, (28) 155; (40) 263, 452.
 - fall, notes, (40) 57.
 - in Nova Scotia, (35) 853.
 - notes, (38) 257, 358.
 - spring, control, (39) 258.
 - spring, remedies, (33) 62.
- Cankerworms, life history and remedies, (39) 64.
- Canna—
 - crossing experiments, (33) 644.
 - edible, drying, (39) 208.
 - edible, fertilizer experiments, (38) 829.
 - edible, yields, (38) 828.
 - edulis, analyses, (37) 165.
 - edulis, culture experiments, (37) 132.
 - indica, hybridization experiments, (32) 520.
 - leaf-roller, larger, notes, (27) 56.
 - seed, impermeable, viability, (35) 740.
 - varieties, (39) 143.
- Cannabis—
 - improvement by selection, (32) 143.
 - sativa, geographical distribution, (26) 335.
 - sativa, phosphorus content, (26) 501.
- Canned—
 - foods—
 - analyses, (27) 165.
 - bacteriological examination, (38) 469; (39) 415.
 - bacteriology, (40) 764.
 - commercial stocks, 1918, (39) 570.
 - culture volumeter for organisms from, (39) 714.
 - effect on tin, (26) 867.
 - examination, (31) 509.
 - inspection, (35) 663; (36) 663.
 - keeping in the open tin, (39) 316.
 - law in Canada, (26) 157, 881.
 - manufacture, (30) 613.
 - mineral content, (34) 67.
 - necessity for dating, (31) 659.
 - poisoning from, (37) 669, 670; (38) 208.
 - preparation, (27) 269.
 - preparation and judging, (30) 259.
 - production and distribution, (40) 461.
 - relation to pellagra, (33) 565.
 - solution of tin by, (37) 12.
 - sterilization, (27) 412; (39) 165.
 - swells and springers in, (28) 361; (32) 356.
 - tin coating on containers, (37) 715.
 - tin content, (26) 66; (33) 661.
 - vitamin content, (40) 555.
 - fruit and vegetables, market standards, (39) 717.
 - fruit, springing of tins, (40) 208.
 - vegetables, analyses and water content, (40) 864.
- Canning—
 - and drying, (39) 208, 418, 718, 808; (40) 18, 67.
 - and drying vegetables, (40) 67.
 - and preserving industry in United States, (30) 791.

Canning—Continued.

- and preserving, recipes, (36) 113.
- blanching in, value, (33) 66; (40) 313.
- club products, marketing, (38) 90.
- club work in Kentucky, (32) 197.
- clubs—
 - for girls, (27) 395.
 - in Arkansas, (33) 95.
 - Detroit, (39) 396.
 - Mississippi, (29) 495.
 - Southern States, (32) 492.
 - organizing and conducting, (26) 795.
 - suggestions for, (31) 794.
- cold pack method, (35) 717; (39) 510, 614.
- contests in Rhode Island, (28) 299.
- crops, culture in Utah Valley, (40) 388.
- directions, (39) 208.
- factories—
 - cooperative, (37) 594.
 - establishing, (39) 894.
 - in Minnesota, (37) 777.
 - inspection in Indiana, (32) 357; (34) 861; (37) 63.
 - inspection in New Jersey, (32) 357.
 - inspection in Ohio, (33) 164, 165.
 - sanitation in, (32) 64.
- factory wastes—
 - disposal, (33) 590.
 - feeding value, (38) 168.
- for boys' and girls' club work, (33) 599.
- home and farm, (31) 394; (36) 509; (37) 599; (38) 208.
- industry—
 - in New Jersey, (32) 65; (36) 689.
 - New York, (34) 40.
 - United States, (31) 67; (38) 208, 414.
 - United States, history, (32) 210.
 - problems in, (39) 510.
 - lessons on, (28) 299.
 - methods in relation to *Bacillus botulinus*, (40) 558.
 - new method, (29) 867.
 - notes, (27) 313; (32) 509; (33) 210; (34) 714; (37) 715; (38) 94, 715.
 - on the farm, (32) 18.
 - outfits, portable, notes, (28) 715.
 - papers on, (40) 864.
 - pork and beans, (39) 717.
 - sirops for, (37) 15.
 - treatise, (32) 253; (36) 717; (38) 114; (39) 317, 716.
 - wastes from pork and beans, purification, (39) 717.
 - without sugar, (35) 807; (39) 717.
- Cannonade, sound, propagation, (38) 510.
- Cannonading—
 - as a protection against hail, (40) 118.
 - effect on rainfall, (37) 418, 512, 619, 717; (38) 115, 511.
- Cantala, culture in Philippines, (30) 229.
- Cantaloups, *see* Muskmelons.
- Cantharellus cibarius—
 - composition, (30) 805.
 - effect on red blood corpuscles, (30) 879.
- Cantharides, effect on chicken meat, (26) 660.
- Cantharidin in *Epicauta adspersa*, (30) 357.
- Cantharoctonus stramineus n.sp., description, (29) 563.
- Canyon bottoms, erosion, (39) 512.
- Caoutchouc, *see* Rubber.
- Capeweed, description, (35) 642; (36) 639.
- Capillaria—
 - n.sp., destructive to deer, (26) 653.
 - strumosa, notes, (40) 587.
- Capillarity, use in biochemical analysis, (29) 408.
- Capillary lift of soils, determination, (33) 618.
- Capital, concentrated, effect on labor and socialistic movements, (29) 491.
- Capnodis tenebrionis, notes, (27) 863.
- Capnodium—
 - brasiliense, notes, (35) 45; (38) 51.
 - brasiliense, treatment, (34) 540.
 - citricolum, notes, (36) 851.
 - citricolum, treatment, (33) 149.
 - heteromeles, notes, (26) 148.
 - sp. on sugar cane, (38) 352.
 - sp. on tea, (39) 57.
- Caponizing, directions, (37) 368, 573.
- Capons—
 - and caponizing, (33) 98; (38) 476.
 - care and management, (37) 368.

Capons—Continued.

- characteristics, (33) 573.
- cost of production, (37) 70.
- feeding experiments, (31) 472.
- notes, (26) 772; (28) 173.
- Capra—
 - aegagrus, notes, (27) 371.
 - hircus, notes, (28) 767.
- Caprification in *Ficus nota*, (30) 55.
- Caprifig seed, edible figs from, (39) 544.
- Caprifigs, mamme, protection against frost, (27) 616.
- Caprimulgus macrurus, synopsis of races, (35) 252.
- Caproic acid in butter, constitution, (29) 508.
- Capsella—
 - bursa-pastoris, geographical distribution, (26) 335.
 - constant variants of, (29) 136.
 - inheritance in, (26) 827.
 - viguieri n.sp., notes, (26) 529.
- Capsicum—
 - annuum—
 - genetics of fruits, (35) 130.
 - hybridization experiments, (30) 533.
 - variation in, (37) 725.
 - variegated races, (39) 123.
 - ash content, (26) 261.
- Capsid bugs—
 - injurious to apples, (32) 849.
 - notes, (35) 464.
 - remedies, (38) 57.
- Capsus solani, notes, (29) 454.
- Capulina spp., notes, (30) 657.
- Carabao—
 - as a dairy animal, (39) 784.
 - blood, studies, (27) 785.
 - grass, notes, (26) 362.
 - louse, notes, (28) 158.
- Carabaos—
 - immunization against rinderpest, (32) 580.
 - immunization in Philippines, (36) 881.
 - in Philippines, (26) 666; (31) 768.
 - of Catanduanes Islands, (27) 771.
 - of Guam, (30) 68.
 - origin and development, (34) 566.
- Carabids injurious to—
 - fruit, (38) 564.
 - strawberries, (38) 654; (39) 654.
- Caradrina—
 - exigua, *see* Laphygma exigua.
 - reclusa, notes, (31) 249.
- Caragana—
 - arborescens as affected by radium, (28) 825.
 - frutescens, drought resistance, (36) 734.
- Carambola, asexual propagation, (32) 142.
- Caramel, detection in—
 - beverages, (27) 207.
 - ginger, (27) 499.
 - vanilla extracts, (26) 111.
- Caramels—
 - examination, (37) 165.
 - sucrose and dextrose, preparation, (33) 65.
- Carausius morosus, parthenogenicity, (38) 858.
- Caraway moth, biology and importance, (29) 759.
- Carbamid, nitrification rate, (32) 124.
- Carbide waste, fertilizing value, (40) 726.
- Carbohydrate—
 - distillates, reducing action, (36) 15.
 - indigestion, notes, (34) 563.
 - metabolism, (27) 464, 871; (28) 262; (39) 69, 874.
 - metabolism—
 - and internal secretions, treatise, (30) 380.
 - as affected by air breathed, (32) 663.
 - as affected by vitamin-free diet, (32) 257.
 - in ducks, (29) 171.
 - relation to thyroid secretion, (29) 868.
 - role of leucocytes in, (36) 265.
 - studies, (26) 359; (37) 64; (39) 69, 365, 874.
 - minimum in human nutrition, (31) 561.
 - mixtures, methods of analysis, (37) 10.
 - transformations in after-ripening of potatoes, (26) 626.
 - transformations in sweet potatoes, (34) 522.
 - utilization as affected by water drinking, (30) 766.
 - utilization in cereal diet, (39) 364.
- Carbohydrates—
 - action of symbiotes on, (40) 464.
 - and amino acids, reaction between, (36) 412.
 - and glucosids, treatise, (28) 710.
 - as an index to quality of feeding stuffs, (37) 208.

Carbohydrates—Continued.

- as source of muscular energy, (28) 462.
- as substitute for fat for infants, (34) 462.
- assimilation by pigs, (32) 170.
- assimilation by sugar beets, (26) 626.
- circulation in plants, (35) 25.
- determination, (26) 709; (33) 314, 712; (36) 614.
- determination in—
 - cereal products, (29) 799.
 - flour, (27) 498.
 - plants, (32) 112, 807.
 - waste liquors of glucose plants, (40) 712.
- effect on—
 - ammonia accumulation by microorganisms, (37) 812.
 - ammonia production and use in killed plants, (28) 327.
 - ammonification, (28) 718.
 - availability of nitrogen, (28) 725.
 - blood sugar in phlorizin diabetes, (35) 863.
 - energy metabolism, (28) 570.
 - intestinal flora, (36) 664; (40) 867.
 - nitrogen excretion during starvation, (33) 663.
 - nitrogen fixation, (28) 816.
 - nutrition and growth, (33) 462.
 - nutritive value of proteins, (40) 562.
 - plant growth, (31) 27.
 - protein metabolism, (26) 765; (34) 762, 763; (36) 364.
 - secretion of urine in infants, (34) 763.
 - toxicity of inorganic salts, (31) 730.
- feeding during inanition, (26) 465.
- feeding, effect on creatin content of muscles, (30) 65.
- formation and decomposition, (27) 635.
- formation in plants, (32) 338.
- function in nutrition, (29) 868.
- handbook, (30) 610.
- higher, preparation and detection, (29) 408.
- in asparagus roots, (26) 24.
- diet, (32) 857.
- diet, varying amounts, (27) 666.
- feeding stuffs, valuation, (26) 363.
- grape leaves, studies, (27) 731.
- leaves, variations in, (29) 827.
- mangel leaves, (28) 128; (36) 125.
- mixed rations, (32) 69, 70.
- Musci, (36) 609.
- Para rubber, (27) 615.
- pine wood, (34) 608.
- potato leaves, (36) 126.
- Savoy cabbage, (33) 310.
- shoots of *Sasa paniculata*, (29) 803.
- snowdrops, studies, (27) 427.
- vegetables, (31) 11.
- wheat and wheat products, (28) 836.
- isodynamic substitution of fats for, (40) 563.
- methods of analysis, (35) 206, 315.
- of cacti, studies, (27) 9.
- oxidation by potassium persulphate, (33) 502.
- photochemical synthesis, (28) 529.
- physiology in the body, (29) 663.
- protein-sparing action of, (31) 763.
- reducing power and fermentative capacity, relationship, (30) 202.
- relation to humus, (34) 515.
- relation to protein synthesis, (40) 562.
- role in—
 - creatin-creatinin metabolism, (26) 158.
 - infant feeding, (35) 165.
 - nutrition, (32) 359.
 - specificity, (36) 411.
- substitution by fat in protein-free diet, (34) 168.
- transformation in the animal organism, (29) 63.
- utilization by green plants, (32) 823; (36) 125.
- water-soluble, in flaxseed, (32) 802.

Carbolic acid—

- solution, effect on potatoes, (27) 748.
- toxicity, (28) 662.
- toxicity in the diet, (35) 473.
- use against—
 - abortion in cattle, (28) 781; (29) 696.
 - anthrax, (27) 182.
 - onion maggot, (30) 160.
 - tetanus, (26) 378; (27) 381; (32) 476.

Carbolineum—

- as insecticide, (26) 561; (31) 155.
- as preservative for poles, (26) 644.
- as soil sterilizer, (26) 322.

Carbolineum—Continued.

- effect on moor soils, (35) 724.
- fungicidal value, (39) 758.

Carbon—

- and alumina, fixation of nitrogen by, (29) 417.
- carbonates, determination in soil, (40) 308.
- nitrogen, equilibrium in soils, (33) 421.
- nitrogen transformation in soils, (32) 124.
- assimilated by plants, origin, (27) 227.
- assimilation by plants, (27) 525; (29) 28; (37) 26; (38) 329, 821.
- bisulphid—
 - as disinfectant for stored corn, (31) 849.
 - fumigant, (40) 350.
 - soil disinfectant, (31) 621.
 - soil sterilizer, (26) 322.
 - combination products, (40) 505.
 - destruction of cockchafer by, (27) 661.
- bisulphid, effect on—
 - baking quality of flour, (26) 357.
 - catalytic power of soils, (28) 118.
 - germination of corn, (28) 456.
 - germination of seeds, (27) 131, 342, 633.
 - germination of wheat, (30) 837.
 - nitrate accumulation in soils, (31) 342.
 - nitrification, (30) 717.
 - parasites, (28) 80.
 - plants, (27) 27, 131.
 - soil organisms, (28) 824; (30) 219; (31) 27; (38) 420; (40) 513, 619.

bisulphid—

- explosion in heated corn, (26) 864.
- fertilizing value, (27) 422; (29) 25.
- for ascarids in horses, (26) 588.
- fumigation, (29) 640.
- fumigation of potatoes with, (31) 756.
- insecticidal value, (34) 249, 252, 851; (37) 559; (40) 162.
- relation to soil organisms and plant growth, (33) 323; (35) 20.
- use against harvester ant, (33) 57.
- against leopard moth, (31) 632.
- against mill insects, (30) 155.
- against weeds, (30) 837.
- in kerosene emulsion, (31) 549.
- black, effect on—
 - action of soil organic compounds, (34) 126.
 - nitrification in soil, (38) 119.
 - plant growth, (36) 212.
 - soils, (36) 214.
- compounds, assimilation by mold fungi, (33) 726.
- determination, (31) 313; (33) 207; (37) 110, 803; (40) 206, 308.
- determination in—
 - biological products, (40) 206.
 - carbon dioxide, (36) 15.
 - soils, (32) 121, 805; (36) 15, 711.
- dioxid—
 - absorption apparatus, (36) 805.
 - absorption by green plants, (31) 33.
 - analysis, apparatus for, (40) 111.
 - and oxygen, effect on nitrogen transformation in soils, (36) 724.
 - as affected by ultraviolet rays, (30) 431.
 - as affecting root growth, (40) 30, 820.
 - as soil disinfectant, (31) 248.
 - assimilation, (39) 225.
 - assimilation by plants, (26) 822; (28) 728; (29) 324; (31) 236; (35) 633; (36) 632.
 - concentration, effect on plants, (33) 628.
 - conservation of grapes in, (28) 437.
 - content of soil air, (39) 516.
 - content of urine, (39) 670.
 - detection, (28) 410.
 - determination, (26) 708; (27) 805; (28) 506; (31) 313; (34) 504, 610.
- dioxid, determination in—
 - air, (36) 806.
 - baking powders, (40) 412, 508.
 - carbonates, (38) 110; (39) 503; (40) 113.
 - expired air, (29) 167.
 - plant respiration studies, (39) 27.
 - soils, (26) 99.
 - solution, (37) 804.
 - water, (28) 203; (29) 808; (31) 806.
 - waters and effluents, (34) 410.
- dioxid, determination of minute quantities, (33) 711.

Carbon—Continued.

- dioxid, effect on—
 - availability of plant food, (27) 514.
 - calcium cyanamid, (32) 125.
 - germination of seeds, (27) 201; (31) 521; (32) 328.
 - hemolytic reaction, (36) 878.
 - nitrification in soils, (35) 627.
 - oviposition of house fly, (38) 563.
 - plant growth, (28) 38; (29) 417; (31) 521, 532; (32) 422, 723.
 - respiration in plants, (35) 821.
 - ripening of persimmons, (26) 327.
 - rotatory power of sucrose and invert sugar, (37) 802.
 - soil reaction, (38) 720.
 - solubility of soils, (33) 513.
 - sprouting of potatoes, (32) 829.
 - taste of water, (30) 714.
- dioxid—
 - elimination by nerves, (29) 466.
 - evolution in seeds, (27) 220.
- dioxid, excretion—
 - after muscular work, (29) 569.
 - and barometric pressure, relationship, (29) 569; (30) 563.
 - during muscular work, (28) 462; (31) 561.
- dioxid—
 - fertilizing value, (28) 728, 837; (31) 140, 235, 519.
 - for orchard heating, (39) 45.
 - forcing plants with, (28) 837.
 - formation from humus preparations, (34) 19.
 - formation in presence of carbohydrates, (34) 127.
 - generator, stopcock for, (40) 202.
 - in incubation, (31) 172.
 - in soils, (28) 320; (32) 718.
 - in soils, relation to bacterial activity, (29) 423.
 - loss from incubating eggs, (33) 575.
 - output during muscular work, (26) 871.
 - output, relation to fatigue, (30) 867.
- dioxid, production—
 - by autofermentation of yeast, (26) 867.
 - during mental work, (29) 768.
 - in soil, (31) 127; (38) 118.
 - in soil, relation to ammonia accumulation, (39) 516.
 - of cultures, apparatus for determining, (38) 181.
- dioxid—
 - relation of growth to algae, (28) 821.
 - respiration in plants, (28) 728.
 - seed treatment, production of secondary dormancy by, (39) 225.
 - separation in sprouting seeds, (28) 728.
 - tension in alveolar air, (34) 369.
 - titration of small quantities, (33) 413.
 - treatment of soils, (39) 38, 618, 620; (40) 739.
 - use with organic manures, (32) 322.
- effect on nitrification, (27) 322.
- in clays and marls, (32) 121.
- in cultivated and abandoned lands, (38) 622.
- monoxid—
 - analysis, apparatus for, (40) 111.
 - detection, (29) 610.
 - effect on catalytic hydrogenation, (38) 409.
 - effect on sprouting of potatoes, (32) 829.
 - in kelp, (36) 804.
- nitrogen, and humus ratios in soils, (28) 217.
- nutrition of plants, (31) 426.
- of food protein, conversion into fat and carbohydrates, (26) 158.
- of urine, heat of combustion, (26) 161.
- organic, determination in soils, (28) 708; (37) 505.
- organic, direct assimilation by *Ceratodon purpureus*, (40) 325.
- protein, utilization by the body, (26) 564.
- tetrachlorid—
 - as a substitute for carbon bisulphid in fumigation, (26) 65.
 - as delousing agent, (40) 651.
 - fumigation, (29) 640.
 - insecticidal value, (34) 253.
 - transformation in soils, (31) 818.
- Carbonaceous food, effect on secretion of enzymes, (28) 727.
- Carbonate and bicarbonate mixtures, titration, (39) 714.

Carbonates—

- alkali, determination, (26) 406.
 - alkaline, determination in chlorinated solutions, (39) 506.
 - determination, (37) 616, 802.
 - determination in—
 - hypochlorite solutions, (40) 309.
 - soils, (30) 113, 808; (35) 415; (38) 313.
 - solution, (37) 804.
 - determination of carbon dioxide in, (40) 113.
 - effect on—
 - nitrification in soils, (26) 817.
 - saccharification of starch, (26) 309.
 - soil bacteria, (38) 818.
 - mixture of, analysis, (40) 112.
 - relation to growth of algae, (28) 821.
 - role in soils, (30) 822.
 - soluble, reaction with metallic salts, (31) 504.
 - v. silicates as sources of lime and magnesia for plants, (32) 622.
- Carbonation—
- in bottles, stirrer for, (37) 716.
 - studies, (39) 804.
- Carbonic acid, combined, determination, (39) 205
- Carbonized material in soils, (28) 418.
- Carboxylase—
- in potatoes and sugar beets, (35) 634.
 - notes, (30) 504.
- Carbunculus, hematic, diagnosis, (30) 180.
- Carburation, treatise, (31) 785.
- Carburetor—
- kerosene, description, (38) 492.
 - performance, standards, (37) 188.
- Carburetors—
- adaptation to low volatile fuels, (40) 191.
 - for burning kerosene, (36) 288.
- Carcella—
- (Exorista) pyste, notes, (31) 752.
 - gnava, biology, (39) 658.
- Carcinoma—
- diagnosis, (26) 483; (30) 682; (31) 876.
 - human, viability in animals, (27) 81.
 - of the genitals, diagnosis, (31) 877.
 - on the skull of a horse, (26) 483.
 - serodiagnosis, (26) 83; (32) 179.
 - transmission by bedbugs, (31) 550.
 - treatment, (40) 767.
 - ulcerating, spirochetes of, (26) 581.
- Cardiac—
- disease, metabolism in, (35) 371.
 - stimulants, tests, (36) 576.
- Cardiophorus spp., notes, (30) 758.
- Carex—
- frankii as a host of curlew bug, (27) 162.
 - rusts affecting in North America, (29) 750.
 - spp., digestibility, (32) 770.
- Caribou—
- conservation, (37) 757.
 - protection in Alaska, (36) 791.
- Carica—
- papaya—
 - botany and culture, (33) 440.
 - origin, (30) 842.
 - sex in, (28) 639.
 - quercifolia, host plant of fruit fly, (26) 758.
- Carissa arduina—
- culture in Guam, (30) 41.
 - host plant of fruit fly, (26) 758.
- Carnation—
- bud rot, notes, (28) 854.
 - disease, notes, (32) 549.
 - foot rot, notes, (27) 752.
 - leaf spot in Italy, (37) 155.
 - mildew, notes, (36) 547.
 - plant bearing flowers of two colors, (36) 837.
 - rust, notes, (37) 453.
 - soils, temperature and moisture studies, (32) 535.
 - stem rot, notes, (30) 247.
 - stem rot, studies, (28) 851; (33) 350.
 - stem rot, treatment, (27) 752.
 - white tip, notes, (36) 47.
 - wilt, notes, (34) 242.
 - wilt or crown rot, cause and treatment, (38) 51.
 - yellows, studies, (38) 51.
- Carnations—
- and pinks, treatise, (27) 41.
 - breeding, (28) 543.
 - breeding experiments, (28) 438; (35) 240.

Carnations—Continued.

- calyx splitting, (39) 746.
- culture and breeding experiments, (39) 746.
- culture, treatise, (26) 337.
- fertilizer experiments, (26) 739; (27) 844; (29) 840; (32) 746; (36) 445; (38) 144; (40) 741.
- greenhouse, red spider on, (39) 65.
- guide, (28) 438.
- inheritance of doubleness, (39) 123.
- insects affecting, (30) 356.
- Mendelian inheritance in, (28) 438.
- multiplication of floral parts in, (30) 644; (31) 443; (32) 535.
- perpetual flowering, (39) 449.
- picotees, and pinks, handbook, (26) 139.
- Thrips flava affecting, (26) 347.
- treatise, (31) 743; (34) 44.
- yearbook, (38) 44.

Carnauba wax, methods of analysis, (28) 511.

Carnaubon in horse kidneys, (30) 477.

Carnegiea—

- gigantea—
- accumulation and destruction of acid in, (34) 730.
- behavior of excised branch of, (35) 820.
- rate and course of growth, (40) 30.

Carnitin in horseflesh, (30) 61.

Carnivora, susceptibility to infectious bulbar paralysis, (33) 179.

Carnosin—

- in meat extracts, (30) 61.
- in rabbit meat, (26) 563.

Carob—

- notes, (25) 362; (29) 330.
- Pods for skim-milk calves, (36) 369.
- treatise, (37) 747.

Carotin—

- detection, (27) 806.
- detection in oleomargarine, (36) 16.
- fate during digestion, (31) 275.
- formation, relation to mitochondria, (29) 827.
- in milk fat, relation to other carotins, (31) 273.
- milk fat, studies, (32) 18.
- oils and vegetables, (39) 713.
- ripening tomatoes, (29) 132.
- pigments, formation, (37) 632.
- spectro-colorimetric estimation in plants, (31) 520.
- toxicity, (36) 164.
- xanthophyll group in Chrysomelidae, (34) 865.

Carotinoids—

- in insects, (34) 865.
- in plants, (34) 627.
- plant and animal, relation, (36) 411.
- plant, studies, (31) 803.

Caroto-albumin, notes, (31) 275.

Carp—

- breeding in rice fields, (30) 675.
- nutritive value and recipes, (38) 165.

Carpenter—

- ant, large black, notes, (26) 147.
- moth, notes, (27) 658.
- worm, see *Prionoxystus robiniae*.

Carpet beetle—

- notes, (32) 250.
- remedies, (39) 762.

Carpet grass—

- culture in cotton belt, (32) 534.
- for cut-over lands, (39) 231.

Carpocapsa—

- funebrana, morphology and biology, (33) 748.
- pomonella, see *Codling moth*.
- splendana, notes, (40) 854.

Carpoglyphus anonymsus, studies, (39) 664.

Carpophilus hemipterus, notes, (34) 454; (40) 853.

Carposina adreptella, notes, (28) 355.

Carrichtera—

- annua, description, (36) 442.
- velle, analyses, (33) 466.

Carrion's fever and verruga, identity, (30) 658.

Carrot—

- fly, remedies, (31) 158.
- leaf spots in Indiana, (39) 52.
- rust fly, see *Psila rosae*.
- seed production in Canada, (33) 226; (34) 635.
- seed production in Denmark, (37) 742.
- seed, vitality, (27) 740.

Carrots—

- analyses, (27) 469; (32) 461, 465; (33) 759; (36) 65; (38) 665.

Carrots—Continued.

- antipolyneuritic substances from, (40) 174.
 - as catch crop after wheat, (37) 136.
 - as source of calcium in diet, (39) 876.
 - breeding experiments, (39) 542.
 - catalytic fertilizers for, (27) 629.
 - composition as affected by irrigation, (28) 332.
 - culture, (26) 393; (27) 32; (28) 42.
 - culture—
 - experiments, (27) 33; (32) 132, 431; (34) 34; (35) 440; (36) 32, 228; (37) 742; (40) 625, 735.
 - in Rhodesia, (27) 32, 637.
 - in South Dakota, (40) 32.
 - on moor soils, (40) 523.
 - with cereals, (31) 735.
 - digestion coefficients, (39) 171.
 - effect on following crop, (40) 624.
 - effect on milk and butter, (34) 570.
 - electroculture experiments, (30) 733; (40) 428.
 - feeding value, (32) 461; (38) 665.
 - fertilizer experiments, (26) 436, 631, 727; (30) 138; (31) 133; (35) 440; (37) 742; (40) 735.
 - fertilizer requirements, (27) 639.
 - field, varieties, (30) 33.
 - food value, (36) 863.
 - formation of pigments in roots, (28) 36.
 - germination in mercury vapor light, (30) 827.
 - growth as affected by sulphur, (29) 215.
 - influence on toxicity of sodium tartrate, (40) 285.
 - inheritance of shortened development, (39) 734.
 - irrigation experiments, (28) 131, 133, 134; (29) 427; (33) 287.
 - liming experiments, (40) 134.
 - losses in cooking, (28) 460.
 - mulching v. clean culture, (33) 534.
 - radio-active fertilizers for, (35) 628.
 - raw and boiled, nutritive value, (40) 267.
 - relation between size of seed and yield, (26) 434.
 - relative yielding capacity, (40) 625.
 - Rhizoctonia disease, studies, (39) 53.
 - sclerotinia diseases, (26) 647; (40) 49.
 - seedling experiments, (29) 432.
 - stock, yields, (40) 734.
 - varieties, (26) 436, 631; (27) 32, 334, 637, 736; (28) 531; (29) 222, 530; (31) 133; (32) 528, 532; (33) 34, 831; (35) 440; (37) 228.
 - varieties for moor culture, (39) 438.
 - variety tests, (39) 336; (40) 735.
 - winter storage, (38) 442.
 - yield as affected by time of thinning, (29) 431.
 - yields, (39) 334.
- Carsidarinae, (26) 149.
- Carthamus tinctorius—
- culture for seed, (37) 230.
 - oil content, (31) 234.
 - studies, (36) 228.
- Cartilage—
- chemistry of, (28) 201.
 - occurrence of fat in, (26) 366.
- Carum petroselinum as a host of eelworm, (34) 349.
- Carvacrol, manufacture, (40) 110.
- Carya of North America, (40) 248.
- Caryota mera, notes, (26) 148.
- Caryoborus gonagra—
- in Hawaiian Islands, (40) 266.
 - life history, (29) 253.
 - notes, (27) 155.
- Casca luzonica n.sp., description, (39) 566.
- Cascara sagrada industry in Pacific Northwest, (32) 46.
- Casease in latexes, (31) 409.
- Casein—
- ammonification in soils, (33) 803.
 - analyses, (26) 171.
 - and caseinogen, difference between, (32) 608.
 - and fat, determination in milk, (31) 674.
 - antigenic properties, (29) 174.
 - antiserum, biological analysis, (30) 112.
 - as affected by rennin, (29) 805.
 - assimilation by ruminants, (31) 71.
 - autoclaving, (39) 369.
 - by-product of sour cream, notes, (26) 81.
 - chemistry of, (32) 606.
 - compounds—
 - composition and properties, (29) 9.
 - preparation and properties, (29) 805.
 - studies, (31) 709.
 - condition of in milk, (32) 607.
 - cooperative manufacture, (30) 16.

Casein—Continued.

- detection, (30) 112.
determination—
 in milk, (30) 414; (31) 114; (32) 413; (33) 503,
 714; (35) 207; (39) 208.
 in milk chocolate, (29) 799; (32) 298.
 in tea and coffee, (29) 799.
 of peptic activity, (31) 504.
digestion by pepsin from different animals, (28)
407.
digestion of, (26) 662.
dried, manufacture, (29) 676.
efficiency for milk production, (36) 872.
factors affecting precipitation, (29) 800.
for clarifying cider and perry, (26) 26.
formation in mammary gland, (32) 411.
gastric digestion, (27) 168.
heated, nutritive value, (34) 369; (36) 160.
hexone bases of, (33) 408.
hydrolysis, (28) 607.
hydrolysis—
 as affected by carbohydrates, (37) 10.
 by trypsin, (29) 202.
 in presence of starch, (38) 613.
 products, prolin fraction of, (30) 463.
 products, refractivity, (28) 15.
importance in the animal organism, (33) 758.
in milk of different breeds, (27) 779.
industrial uses, (30) 378.
industry in Europe, (29) 173.
isoelectric point of, (31) 175.
judging, (29) 411.
lysine content, (31) 559.
maintenance experiments with, (28) 864.
manufacture, (26) 276, 779, 801; (27) 179; (29)
673; (40) 415.
manufacture—
 and use, treatise, (29) 312.
 from milk, (30) 378.
 in Denmark, (28) 512.
 in northern Europe, (30) 177.
media for milk analysis, (26) 576; (29) 718.
methods of analysis, (33) 176.
milk, mineral elements in, (30) 611.
nephelometry in study of, (30) 410.
nutritive value, (40) 463, 464.
of buttermilk and skim milk, (39) 386.
cow's and goat's milk, cleavage, (27) 12.
goat's milk, composition, (34) 708.
human and cow's milk, composition, (26)
112.
 human milk, (39) 668.
 milk, tryptic and peptic cleavage, (26) 565.
 soy beans, (40) 415.
osmotic pressure of, (26) 307.
phosphorus, biological significance, (27) 169.
preparation, (39) 501.
protein for milk production, (36) 671.
rôle in glycogen formation, (31) 763.
solubility in dilute acids, (31) 409.
solubility in dilute salt solutions, (40) 710.
solution by sodium hydroxide, (36) 108.
solution by sodium hydroxide in presence of
alkali, (35) 712.
spray, preparation and use, (34) 745.
studies, (40) 802.
symposium on, (28) 777.
use in Bordeaux mixture, (33) 450.
value for growth or maintenance, (37) 864.
vegetable, production, (26) 613.
Caseinogen—
 action of coagulating enzymes on, (32) 607.
 and casein, difference between, (32) 608.
 density and solution volume, (31) 804.
 effect on gaseous metabolism in man, (28) 569.
 preparation and composition, (35) 201.
 separation of hydrolysis products, (40) 611.
Cashew—
 notes, (29) 746.
 nut industry in India, (32) 46.
 nuts, microscopic identification, (28) 565.
Casimiroa edulis, culture in California, (26) 743.
Cassava—
 analyses, (30) 174; (31) 37; (32) 40, 252; (33) 568;
 (39) 208.
 ant, studies, (31) 656.
 as food, (36) 561.
 as source of starch, (37) 535.
 bacterial disease, notes, (35) 245.
 beetles in Java, (35) 467.

Cassava—Continued.

- bran, analyses and feeding value, (29) 769.
breeding experiments, (26) 435.
culture, (38) 535; (39) 423.
culture—
 and manufacture, (30) 38.
 and use, (40) 763.
 experiments, (29) 830; (30) 229; (31) 226; (40)
 231, 434.
 in Philippines, (26) 361; (40) 231.
dieback, notes, (36) 541.
dieback, treatment, (34) 841.
diseases in Trinidad and Tobago, (34) 51.
diseases, notes, (28) 854.
dried, and cassava flour, (39) 208.
farine, manufacture, (32) 761.
fertilizer experiments, (29) 829; (30) 34, 525; (33)
227; (36) 332; (38) 829; (40) 626.
flour, analyses, (39) 870.
flour and starch, examination, (29) 361.
flour for dairy cattle, (34) 873.
for pigs, (30) 174; (32) 569.
growth in calcareous soils, (31) 627, 816.
handbook, (40) 435.
hawk moth, notes, (28) 354; (38) 261.
hydrocyanic acid in, (33) 260, 665; (37) 168.
improvement, (28) 736.
insects affecting, (28) 854; (30) 752; (34) 754; (37)
460.
leaf and stem disease, notes, (34) 843; (37) 551.
meal for calves, (30) 765.
meal for dairy cows, (31) 573; (33) 275.
mite, notes, (35) 263.
notes, (26) 362.
planting experiments, (38) 530.
production in St. Vincent, (39) 835.
pulp, analyses, (34) 665.
red mite of, (40) 656.
root, notes, (29) 362.
roots and their by-products, analyses, (30) 613.
roots, starch content, (30) 502.
silage, notes, (31) 732.
spraying experiments, (34) 50.
starch, determination, (26) 709.
stem borer, notes, (34) 65.
use, (32) 761.
varieties, (26) 435, 534, 733; (28) 828; (30) 434,
525; (31) 524; (35) 134; (36) 735; (38) 33, 335,
526, 530, 825.
variety tests, (40) 522.
Cassia—
 auriculata bark for tanning, (37) 147.
 chamaecrista, culture, (34) 736.
 ground, analyses, (29) 462.
 hirsuta as a green manure, (26) 528.
 oil, constituents of, (34) 501; (40) 202.
Cassida—
 nebulosa, notes, (31) 157.
 pallidula, notes, (35) 657.
 pallidula, studies, (36) 57.
Cassytia—
 filiformis, habits and relations, (30) 745.
 filiformis, notes, (37) 452.
 melantha, autoparasitism in, (34) 626.
Castaneas—see also Chestnuts.
 parthenogenesis in, (30) 544.
Castanopsis chrysophylla, planting in Southern
States, (26) 651.
Castanospermum australe, toxicity, (26) 278.
Castilla—
 elastica, culture in Dominica, (29) 748.
 elastica, tapping experiments, (26) 443.
 seed, prolonging viability of, (29) 642.
Castnia—
 daedalus, notes, (30) 359.
 licus, notes, (28) 555; (30) 853; (38) 459.
 licus on sugar cane, (40) 57.
 therapon in New Jersey, (36) 54.
Castor bean—
 ash, analyses, (29) 714.
 bacterial wilt, studies, (39) 550.
 cake, fertilizing value, (27) 337; (38) 220, 337.
 crown gall, X-rayed, (39) 453.
 diseases, notes, (33) 545.
 floral anomalies in, (29) 629.
 leaf rust in Morocco, (39) 53.
 lipase—
 action upon esters, (31) 710.
 action upon fats, (39) 411.

Castor bean—Continued.

lipase—continued.

- as affected by manganous sulphate, (29) 713.
- as affected by neutral salts, (30) 409.
- extraction experiments with, (31) 711.
- notes, (30) 204.
- studies, (27) 712.

meal—

- as wheat bran adulterant, (38) 712.
- detection in feeding stuffs, (29) 205; (30) 204.
- fertilizing value, (31) 820; (35) 126.
- plant for sheep, (26) 368.
- plants as test for ethylene gas, (30) 227.
- poisoning, notes, (28) 80.
- poisoning, studies, (34) 466.
- products, detection in feeding stuffs, (26) 209.
- rust, studies, (30) 845.
- urease, experiments with, (32) 710.

Castor beans—

- breeding experiments, (40) 435.
- culture and utilization, (33) 438.
- culture experiments, (32) 227; (36) 830; (38) 336, 527.
- culture in Egypt, (38) 338.
- description and analyses, (30) 733.
- esterase and lipase of, (32) 803.
- fumigation with hydrocyanic acid gas, (33) 522.
- in northern Africa, (40) 234, 334.
- in Rhodesia, (40) 526.
- insects affecting, (40) 453, 649.
- lipase in, (28) 610.
- of Indo-China, analyses, (40) 627.
- production and exploitation, (40) 334.
- Pythium debaryanum affecting, (31) 51.
- toxicity, (27) 378; (31) 80.
- urease in, (30) 409.
- varieties, (30) 434, 525.
- yields, (39) 434.

Castor oil—

- as a vermifuge, (38) 883.
- detection, (29) 613.
- detection in ethyl alcohol, (29) 312.
- determination of purity, (39) 109, 110, 416.
- hydrolysis and constitution, (27) 804.
- Indo-Chinese, acidity, (39) 504.
- physical constants, (35) 312.
- plant, treatise, (40) 234.
- production in United States, (40) 614.

Castor pomace—

- availability of nitrogen in, (35) 426.
- fertilizing value, (30) 835; (37) 144, 321.

Castration—

effect on—

- blood of animals, (26) 83.
- growth of bones, (26) 471.
- horn growth in sheep, (29) 772; (31) 867.
- internal organs, (29) 168.
- internal secretion glands of rabbits, (34) 864.
- man and domestic animals, (28) 571.
- sheep, (27) 70.
- size of cells, (26) 364.

in birds, (40) 871.

- of animals, treatise, (32) 578; (33) 176; (34) 477.
- parasitic, in Membracidae, (26) 148.
- relation to secondary sexual characters in Brown Leghorns, (29) 69.
- relation to transmissible tumors of rats and mice, (30) 167.

Casuarina—

- insects affecting, (28) 753.
- trees, borer injury (40) 860.

Cat flea, *see* Ctenocephalus felis, and Fleas.

Cat-tail rush as summer host of insects, (37) 461.

Catalase—

- activity and respiration in sweet corn, (39) 524.
- activity in etherized bulbs and tubers, (30) 728.
- activity of tissues in avian polynuritis, (40) 563.
- and oxidase reactions, separation, (36) 503.
- as affected by inorganic salts, (26) 504.
- chemical nature, (33) 311.
- determination, (26) 204; (31) 413.
- in blood as affected by—
 - acetone and certain acids, (40) 766.
 - alcohol, (40) 364.
 - food ingestion, (40) 364, 365, 766.
- in butter, (29) 508.
- chicken fat, (28) 63.
- eggs, (28) 64.

Catalase—Continued.

- in liver, effect of emotions on, (38) 167.
- milk, (26) 112, 507; (28) 611.
- milk, factors affecting, (35) 10.
- sterile milk, (28) 411.
- tissues during starvation, (38) 869.
- tissues during thyroid feeding, (38) 870.
- increasing and inhibiting activity of, (28) 504.
- localization in marine algae, (31) 626.
- notes, (27) 109.
- plant, physiology of, (26) 803.
- production, action of vitamin on, (40) 563.
- relation to oxidase in plant tissue, (36) 610.
- role in—
 - acidosis, (38) 870.
 - plant respiration, (34) 523; (36) 329.
 - plants, (27) 526.
- separation of peroxides from, (27) 408.
- solution, destruction by erepsin, (33) 311.
- studies, (33) 409.
- tests in dairy inspection, (27) 781.
- use of term, (33) 329.

Catalpa—

- as affected by tarring roads, (26) 432.
- cost of growing, (37) 451.
- description and culture, (27) 346.
- hardy, culture, (27) 147.
- hardy, notes, (26) 51.
- leaf spot, notes, (39) 353.
- midge in Maryland, (38) 155.
- speciosa, culture, (27) 147.
- sphinx, notes, (26) 753; (28) 155, 353; (34) 755.
- wood rots, notes, (27) 752.
- wood rots, studies, (28) 551.

Catalysis, treatise, (29) 504; (34) 312; (35) 801.

Catalysts, oxidation by, (33) 329.

Catalytic—

- fertilizers for sugar beets, (26) 225.
- fertilizers, studies, (27) 628.
- substances, fertilizing value, (33) 841.

Catalyzers—

- biochemical, textbook, (32) 662; (38) 611.
- use in destructive distillation of hardwoods, (38) 808.

Catarrh—

- in horses, treatment, (34) 881.

intestinal—

- effect on milk, (32) 479.
- immunization, (27) 582.
- in cattle, (34) 575.
- transference from mother to offspring, (27) 583.
- laryngo-tracheal, in horses, (34) 480.
- uterine, in a mare, (27) 684.

vaginal—

- immunization, (30) 578.
- in cows, treatment, (26) 285; (27) 886.
- relation to abortion, (27) 287.
- treatment, (27) 888.

Catarrhal fever, malignant—

- in cattle, (31) 381; (37) 80.
- in horses and mules, (31) 287.

Catasetum, flowers of, (35) 431.

Catastoma spp., effect on vegetation, (38) 222.

Catch crops, notes, (29) 331; (36) 529.

Caterpillar plague in California, (26) 346.

Caterpillars—

- bacterial diseases of, (32) 554.
- bag-shelter, injurious to horses, (26) 456.
- defoliating, remedies, (31) 60; (32) 850.
- dipterous parasites of, (32) 847.
- flacherie and polyhedral disease of, (32) 851.
- habits, (27) 559.
- looper, notes, (30) 753.
- range, studies, (36) 55.
- red-humped, notes, (30) 157.
- remedies, (26) 561.
- studies, (26) 859, 860.
- surface-feeding, locomotions, (40) 352.
- treatise, (31) 850.
- wilt disease of, (30) 252.
- yellow bear, control by parasites, (37) 760.

Catha edulis—

- culture in Egypt, (34) 232.
- description, (26) 139.
- Cathartics, saline, effect on metabolism, (28) 867.

Cations—

- bivalent, effect on permeability of protoplasm, (33) 328.
- toxicity toward plants, (30) 128.

- Catjang, notes, (26) 362.
 Cato seed oil, physical constants, (35) 312.
 Catocala spp. affecting pecan, (38) 762.
 Catocalinae in British Museum, catalogue, (31) 652.
 Catochrysops pandava, notes, (40) 260.
 Catolaccus townsendi n.sp., description, (30) 59.
 Catophractes alexandri, analyses and digestibility, (27) 871; (32) 167.
 Catorama mexicana, notes, (27) 155.
- Cats—
 care and feeding, (28) 173.
 color inheritance in, (40) 870.
 destruction of wild life by, (36) 653.
 dissemination of anthrax by, (28) 678.
 ear, geographical distribution, (26) 335.
 factors affecting pulse rate, (28) 768.
 growth of, (30) 467.
 mange affecting, (37) 584.
 milk, composition, (40) 775.
 morphology of blood, (28) 777.
 mucous membrane of, (26) 480.
 paralysis in, (26) 185.
 parasites and diseases of, treatise, (31) 586.
 relation to Rocky Mountain spotted fever, (27) 479.
 reproductive organs of, (27) 369.
 tortoise-shell, color inheritance in, (38) 269.
- Catsup—
 bacteriological examination, (37) 468.
 determination of sodium benzoate in, (27) 809.
 manufacture, (32) 356.
 methods of analysis, (32) 253, 298.
- Cattaloes, notes, (31) 266, 566, 567.
- Cattle—*see also* Cows, Calves, Heifers, Steers, etc.
 Aberdeen-Angus, economic importance, (38) 69.
 Aberdeen-Angus, history, (33) 72.
 Afrikander, notes, (34) 767.
 Afrikander, origin and characteristics, (28) 670.
 Algau-African crosses, notes, (29) 171, 369.
 amoebae affecting, (27) 477.
 anaphylactic shock due to ox warble extract, (36) 478; (37) 379.
 anatomy and physiology of mammary glands, (26) 774.
 ancestry, (27) 870.
 ancestry, treatise, (28) 466.
 as affected by—
 certain alkaloids, (29) 476.
 dips, (27) 477.
 excessive wheat feeding, (36) 865.
 frozen silage, (26) 570.
 Hypoderma lineatum, (39) 157.
 as draft animals, (38) 790.
 Australian, worm nodules in, (26) 183.
 Ayshire—
 inheritance of aural abnormality in, (33) 873.
 measurements and descriptions, (28) 467.
 milk production in relation to advanced registry, (37) 775.
 origin and characteristics, (33) 873.
 sex-limited color in, (35) 272.
- barns—
 for prairie farms, (35) 689.
 plans, (31) 488.
 ventilation, (32) 284.
- basal katabolism, (39) 270.
 Bazadaise, notes, (31) 367.
- beef—
 breeds, (32) 568.
 care and management, (31) 266.
 cost of raising, (35) 670; (39) 169.
 feeding experiments, (39) 72, 168, 273, 370.
 growth on limited ration, (40) 567.
 maintenance, (38) 270.
 raising in Pennsylvania, (35) 168; (39) 72.
 raising in South, (39) 477.
 raising in West, (40) 177.
 ratio of bone to meat, (40) 555.
 trypanosomes in, (28) 284.
 v. dairy type, fattening, (38) 667.
 wintering, (40) 472.
 beet tops for, (30) 473.
 Bergschicken, investigations, (27) 571.
 biometrical methods in study of, (28) 873.
 birth weights of eight breeds, (40) 873.
 black and white—
 ancestry, (27) 70; (28) 770.
- Cattle—Continued.
 black and white—continued.
 East Friesian, blood lines, (27) 277.
 of Holland, origin, (26) 166.
 blood—
 changes in due to method of slaughter, (34) 372.
 count as affected by altitude, (31) 679.
 marginale points in, (26) 173.
 meal for, (36) 369.
 blue breed of the north, notes, (26) 73.
 blue-gray, inheritance in, (36) 168.
 blue-gray, notes, (26) 667.
 Bordelaise, characteristics, (27) 873.
 bracken poisoning, (39) 891.
 brains of, (31) 165.
 branding chute for, (26) 385.
 Brazilian Caracé, notes, (27) 172.
 breeders' associations in France, (27) 277.
 breeding—
 and care, (33) 71.
 management, (28) 466.
 management, treatise, (34) 467.
 utilization, promotion, (28) 92.
 as affected by nutrition plane, (31) 367; (33) 265.
 circuit in North Dakota, (33) 78.
 community, (30) 678; (40) 300.
 cooperative, (26) 169; (27) 899.
 diseases of, (40) 778.
 Dutch methods, (31) 474.
 experiments, (26) 166; (27) 672; (28) 670; (29) 666; (31) 664; (35) 564, 570, 869; (37) 66; (40) 73, 873, 877.
 for dairy production, (38) 176.
 for weight and milk production, (29) 673.
 handbook, (27) 277.
 in Alaska, (28) 465; (29) 770.
 Bavaria, (27) 873.
 Denmark and Sweden, (29) 666.
 Dutch East Africa, (29) 666.
 French Guinea, (30) 171.
 Holland, (29) 666.
 Kamerun, (27) 872.
 Latium, (27) 172.
 Mecklenburg, history, (26) 273.
 Netherlands, (31) 596, 691.
 Philippines, (30) 869.
 Punjab, (30) 767.
 Rhodesia, (29) 273.
 Sao Paulo, (29) 368.
 Sweden, (26) 477.
 Tahiti, (28) 265.
 Vorarlberg, (27) 877.
 West Flanders, (29) 771.
 investigations, (37) 775.
 maintenance in winter, (34) 171.
 notes, (26) 768.
 problems in, (32) 169.
 records, (40) 873.
 station in India, report, (26) 232.
- breeds—
 and origin, textbook, (39) 881.
 British, (29) 571.
 in Belgian Congo, (32) 865.
 in France, (32) 169.
 in Saxony, (32) 774.
 tests, (26) 879.
 British, new piroplasm in, (26) 683.
 "bulldog," notes, (35) 374.
 cactus for, (39) 70.
 calipers, (40) 872.
 castration, (29) 168.
 Central-German red, notes, (34) 264.
 Charollaise, notes, (28) 267.
 charts for schools, (31) 299.
 Chiana and Romagna breeds, comparison, (29) 68.
 Claviceps paspali poisoning in, (39) 891.
 color inheritance in, (38) 574; (40) 870.
 combustible gases excreted by, (27) 500; (28) 69.
 composition during fattening, (27) 499.
 conformation studies, (26) 573.
 correlation measurements, (28) 68.
 cost of maintenance and growth, (27) 499.
 cost of production, (28) 467; (33) 667, 668; (38) 471.
 cotton-seed meal for, (32) 865.

Cattle—Continued.

- Creole, of Argentina, (30) 171.
 cysticerai affecting, (27) 182.
 dairy—*see also* Cows.
 and beef, cross-breeding, (40) 73.
 and beef, for baby beef production, (40) 74.
 breeds, history and development, (34) 472.
 breeds, prolificacy in, (33) 576.
 care and management, (37) 872.
 care of teeth, (30) 884.
 cost of raising, (34) 470.
 feeding, (37) 474.
 form and function, relationship, (27) 675.
 judging, (33) 899.
 judging in Denmark, (31) 770.
 manual, (37) 574.
 Shorthorn, breeding and selection, (29) 473.
 soiling crops for, (31) 265.
 treatise, (26) 78.
 deficiency diseases of, (36) 161.
 dehorning, (32) 680.
 dehorning and castrating, (39) 290.
 detection of foreign bodies in, (26) 678.
 determination of—
 age, (29) 368; (37) 482, 770.
 hemoglobin in, (29) 68.
 live weight, (33) 569.
 development of limbs, (34) 564.
 Devon, notes, (29) 571.
 digestion experiments, (31) 767; (34) 372; (39) 673.
 dipping, (26) 382; (28) 181; (34) 479.
 dipping at short intervals, (29) 886.
 dipping tanks, control of fluid in, (31) 776.
 dipping tanks for, (29) 87.
 dips, arsenical, preparation and use, (31) 776.
 disease—
 in mountainous regions of California, (37) 477.
 Patagonia, (39) 85.
 Philippines, (38) 183.
 Sierra Nevada foothills, (36) 79.
 western Nevada, (38) 487.
 new, in Argentina, (38) 687.
 resembling Texas fever, (32) 781.
 transmission by blood-sucking insects, (27) 150.
 diseases—*see also specific diseases*.
 control during war, (38) 287.
 diagnosis, (36) 676.
 effect on milk, (32) 478.
 handbook, (37) 778.
 in British East Africa, (30) 576.
 in Imperial Valley, (26) 482.
 in South Africa, (33) 384.
 losses from, (35) 192.
 nature and treatment, (34) 383.
 notes, (26) 373; (27) 181; (29) 676; (31) 266, 272.
 of digestive organs, (40) 86.
 relation to phosphate depletion of soil, (38) 118.
 report on, (36) 881.
 treatise, (26) 485; (34) 278, 477, 478; (38) 781.
 treatment, (37) 583.
 domestic, ancestry, (27) 172.
 domestic, origin and classification, (27) 70.
 domestication and improvement, (29) 68.
 dual-purpose, (35) 476.
 dual-purpose Red Polled, origin, (37) 866.
 dual-purpose Shorthorn, origin, (37) 574.
 duration of oestrus in, (37) 776.
 East Friesian, origin and measurements, (28) 572.
 East Indian, in Jamaica, (26) 472.
 effect of standing or lying on metabolism, (28) 68.
 elimination of tubercle bacilli from, (31) 84.
 entrails, utilization, (30) 567.
 estimating condition, (32) 399; (33) 469.
 European breeds, classification, (26) 267.
 examination of feces, (27) 481.
 experimental studies, (27) 172.
 exports from Canada, (26) 768.
 exports from Mexico, (27) 70.
 exports from United States, (26) 768.
 factors affecting pulse rate, (28) 768; (29) 66.
 fattening in relation to feed and environment, (34) 305.

Cattle—Continued.

- feeding—*see also* Cattle, beef, Calves, Cows, and Steers.
 feeding, (26) 164, 879; (27) 375.
 feeding—
 and management, (28) 581.
 and management, textbook, (37) 172.
 economic factors in, (28) 72.
 experiments, (26) 468, 767; (27) 672, 673, 776, 873; (28) 71, 169, 266, 770; (29) 65, 272, 468; (30) 566, 868, 870; (31) 468, 573, 664, 766; (32) 168, 260, 462, 471, 769; (33) 170, 371, 569; (34) 170, 171, 467, 566; (35) 168, 372, 374; (36) 167; (37) 66, 269, 769, 866, 895; (38) 167, 369, 370, 371, 571, 666, 669, 770, 771, 774; (40) 369.
 experiments in Denmark, (33) 174.
 experiments on pasture, (30) 468.
 for growth and reproduction, (39) 71.
 in Punjab, (27) 669.
 south Texas, (34) 265.
 the corn belt, (31) 468, 865.
 the South, (28) 796; (33) 668.
 mineral requirements in, (33) 870.
 on phosphate fertilized pastures, (31) 174.
 on the farm, (32) 668.
 profits and losses in, (34) 867.
 rack, description, (38) 593.
 relation to agriculture, (28) 365.
 relation to soil improvement, (26) 873.
 review of literature, (33) 170.
 starch values in, (33) 673.
 treatise, (32) 258.
 feeds, methods of analysis, (26) 99.
 fermentation products of stomach and intestines, (30) 670.
 fetal life, (40) 466.
 finishing on roughage without grain, (30) 100.
 fish for, (32) 862.
 fish meal for, (33) 169.
 fitting for the show-ring, (34) 73.
 Flemish, notes, (30) 869; (32) 364.
 floating horns of, (29) 771.
 Fribourger black and white, notes, (30) 775.
 Friesian, scale of points for, (26) 73.
 gains on mountain pastures, (28) 873.
 Galloway, for Alaska, (39) 168.
 Garonnalse, notes, (31) 367.
 Gayal and Gaur, similarities, (29) 571.
 Gayal hybrids, descriptions, (28) 670.
 Gayal hybrids, measurements, (27) 672.
 gestation period, determination, (34) 565.
 grape marc for, (32) 567.
 grazing experiments, (36) 270.
 growing, nutritive ratios for, (34) 372.
 growing, protein requirements, (26) 768.
 growth data, (28) 467.
 Guernsey, advanced register records, (33) 275.
 Guernsey breed, (40) 179.
 Hannaberner, studies, (30) 869.
 hard palates of, composition and digestibility, (35) 763.
 Harz, characteristics, (27) 277.
 health herd book, (37) 482.
 healthy, trypanosomes in, (28) 584.
 heat production of, (30) 268.
 helminths affecting, (27) 886.
 Hereford, origin and development, (33) 73.
 Hereford-Shorthorn, color, (27) 771.
 hides, supply of, (32) 91.
 Holstein-Friesian, color markings of, (30) 572.
 Holstein, measurements, (32) 861.
 host of spotted fever tick, (26) 64.
 husbandry, course in, (33) 696.
 Illawarra, notes, (27) 877.
 Illawarra, registration requirements, (27) 74.
 immunization against—
 abortion, (28) 380; (30) 184.
 African coast fever, (26) 683, 882; (29) 476; (31) 585; (32) 273.
 anaplasmosis, (31) 585; (32) 476.
 anthrax, (28) 376, 778; (31) 82.
 foot-and-mouth disease, (28) 284; (30) 280; (31) 879.
 hemoglobinuria, (26) 285.
 intestinal catarrh, (27) 582.
 piroplasmosis, (31) 585; (32) 476.
 rinderpest, (26) 377; (31) 283; (32) 580; (38) 484.
 Texas fever, (28) 882.

Cattle—Continued.

- immunization against—continued.
 - tuberculosis, (26) 284, 380, 584, 680, 681; (29) 499, 584, 886; (30) 482; (31) 85, 380, 779; (32) 679.
 - vaginal catarrh, (28) 380.
- immunization in Philippines, (36) 881.
- importation into Philippines, (26) 666.
- imported—
 - high temperature periods in, (31) 482.
 - in Jamaica, (27) 172.
 - into Germany, tuberculin test for, (26) 282.
- improvement, (28) 176; (37) 768.
- improvement, value of good sires, (37) 866.
- in Africa and Polynesia, studies, (26) 472.
- Belgium, importation and exportation, (32) 668.
- Bengal, survey, (39) 269.
- British Museum, (30) 767.
- central Pyrenees region, (26) 768.
- Demonte, Italy, (32) 668.
- French West Africa, (32) 365.
- Kongo, (31) 865.
- Philippines, (31) 768.
- Philippines, ancestry, (26) 666.
- United States, (31) 73, 167.
- Uruguay, new trypanosome in, (26) 584.
- Indian breeds, notes, (26) 667.
- industry in—
 - Argentina, (28) 365; (29) 170, 171.
 - Australia, (29) 570; (31) 266.
 - Bengal, (34) 767.
 - British India, (28) 467.
 - Canada, (32) 865; (33) 93.
 - Chile, Colombia, and Argentina, (31) 666.
 - Colorado, (38) 772.
 - Friuli, (27) 70.
 - Germany, (30) 170.
 - Great Britain, (31) 565.
 - Hungary, (27) 672.
 - Italy, (26) 130.
 - Paraguay, (27) 771.
 - Queensland, (27) 489.
 - the French Alps, (29) 190.
 - Uruguay, (27) 171.
 - western Canada, (26) 167.
 - Württemberg, treatise, (28) 873.
- industry, statistics, (27) 571.
- infection with—
 - avian tuberculosis, (26) 583.
 - Trypanosoma americanum, (29) 680.
- inheritance of—
 - characters, (40) 367.
 - characters in dairy and beef crosses, (40) 73.
 - color in, (31) 266, 470.
 - milk yield in, (27) 375.
 - poll character in, (29) 68.
 - twin calving in, (32) 568.
- injury due to grazing, (29) 543.
- inoculation with abortion bacillus, (29) 779.
- inspection for interstate shipment, (34) 185.
- insurance—
 - in France, (30) 792.
 - in India, (36) 290.
 - societies in Holland, (30) 493.
 - societies, mutual, in Burma, (31) 593.
- intestinal flora of, (35) 76.
- intracutaneous tuberculin reaction with, (26) 180.
- intra-dermal reaction in, (31) 181.
- Irish-Kerry, studies, (30) 869.
- Japanese, craniometry, (40) 276.
- Jersey—
 - inbreeding, (37) 776; (38) 269.
 - St. Lambert strain, (30) 73.
 - variation in tongue color, (30) 98; (31) 565.
- Jersey-Angus—
 - breeding experiments, (32) 865.
 - crosses, notes, (29) 171.
- judging, (30) 679; (33) 71, 899; (37) 94.
- judging for selecting dairy cows, (40) 872.
- judging, treatise, (27) 571.
- Kerry and Dexter, notes, (32) 267.
- Kerry, origin and characteristics, (37) 776.
- Kirghiz, of southern Siberia, (30) 473.
- labor requirements, (36) 790.
- lavocat for, (30) 67.
- length of gestation, (40) 873.
- lessons on, (26) 493.
- lice control, (40) 651.

Cattle—Continued.

- lice in Montana, (37) 687.
- lice, life history and remedies, (38) 764.
- Lincolnshire Red Shorthorns, (33) 668.
- loan banks, notes, (31) 594.
- loan companies, treatise, (40) 389.
- localization of pigment in, (27) 369.
- loss of weight in shipping, (27) 873.
- lowland and highland, length of neck, (30) 671.
- lowland v. mountain, slaughter tests, (27) 70.
- lymphatic system, (27) 784.
- maintenance—
 - factors affecting cost, (33) 569.
 - rations, (26) 167, 664; (28) 169.
- male, collection of urine and feces from, (29) 408.
- management in Alaska, (39) 168.
- manual, (26) 165.
- manure, fertilizing value, (26) 232; (27) 337; (38) 433.
- manure, preservation, (30) 25.
- marginal points in blood corpuscles, (27) 784.
- marketing, (31) 266.
- marketing in the South, (37) 391.
- measurements, (28) 472, 571, 767; (29) 68, 169, 571.
- measurements—
 - importance of, (31) 168.
 - of skeletons, (28) 667.
 - treatise, (27) 675.
- metabolism experiments, (28) 68; (32) 98; (35) 271.
- methods of measuring, (26) 473.
- microorganisms in—
 - conjunctival sac of, (26) 176.
 - large intestine, (29) 466.
 - mesenteric glands, (28) 885.
- milking Shorthorn, association in America, (34) 269.
- Moravian, handbook, (26) 268.
- Moravian prehistoric, studies, (30) 869.
- mucous membrane of, (26) 480.
- Murboden and Pinzgau, growth measurements, (28) 267.
- nematode in connective tissue, (27) 83; (28) 81.
- nodular intestinal disease, (27) 289.
- nontuberculous, advance registration for, (34) 184.
- Normandy, notes, (30) 473.
- Norland mountain, improvement, (27) 675.
- Norwegian, origin, (27) 277, 771.
- nutritive requirements, (31) 766.
- oak poisoning, (39) 386.
- of Argentina, (29) 468.
- Brazil, (30) 567; (33) 469.
- Catanduanes Islands, (27) 771.
- different ages, feeding experiments, (40) 74.
- Dutch East Africa, (29) 468; (30) 171.
- German Southwest Africa, (33) 668.
- Germany, (33) 296, 668.
- Guam, (30) 68.
- Holland, characteristics and measurements, (31) 474.
- India, improvement, (30) 671.
- Italy, (29) 571.
- Jamaica, improvement, (33) 870.
- northern Spain, (31) 169.
- Ruanda, German East Africa, (31) 565.
- Saint Giron and Aure valleys, (31) 565.
- Touraine, (27) 74.
- Tunis, description, (27) 571.
- Volhynia, origin and characteristics, (28) 467.
- Wales, (29) 571.
- West Prussia, inbreeding and heredity in, (30) 569.
- oil cakes for, (38) 572.
- origin, (33) 469.
- origin and ancestry, (26) 165.
- origin and distribution, (31) 564.
- paralysis in, (26) 185.
- parasites of fourth stomach, (30) 381.
- parathyroid glands of, (29) 377.
- pasture grasses for, (40) 72.
- pasturing experiments, (26) 367; (32) 567; (39) 474.
- paunch contents as pig feed, (33) 672.
- paunch movements in, (27) 68.
- pigmentation in, (28) 769.
- Piroplasma spp. affecting, (28) 82.
- plague—see also Rinderpest.
 - bacterium, opsonic power of serums against, (27) 285.

Cattle—Continued.

poisoning—*see also* Livestock and Forage poisoning, Plants, poisonous, and specific plants.

- by acorns, (26) 586.
- black bean, (26) 278.
- ergot, (26) 586; (28) 80.
- flaxseed screenings, (26) 86; (28) 477.
- larkspur, (27) 180; (29) 280; (35) 780.
- mangels, (27) 780.
- ragwort, (38) 82.
- Simulium bites, (32) 82.
- soy-bean meal, (36) 580.
- tobacco juice, (30) 577.
- yellow jasmine, (34) 80.
- Zygadenus, (33) 177.
- in pasture, (30) 584.
- prices in Russia, (37) 292.
- pure bred, handling, (34) 185.
- pure bred, in Montana, (36) 470.
- Raisers' Association of Texas, (30) 268.
- raising—
- in Alaska, (36) 469.
- Argentina, (26) 874.
- blue grass region, (33) 868.
- Chile, (30) 671.
- corn belt States, (35) 668.
- Italian Somaliland, (34) 227.
- Jamaica, (29) 570.
- Pennsylvania, (38) 69.
- Scotland, (38) 772.
- Tunis, (29) 369.
- on Indian reservations, (35) 374.
- southwestern ranges, (38) 470.
- the range, treatise, (29) 666.
- western range States, (35) 667.
- treatise, (29) 368.
- under modern intensive farming, (30) 170.
- range—
- bred, interstate movement, (38) 179.
- emergency feed for, (40) 276, 471.
- maintenance on yucca and sotol, (40) 277.
- rations for, (34) 72, 372.
- red, of Denmark, studies and bibliography, (26) 667.
- red, of Flanders, (31) 169.
- Red Poll—
- for dairying, (30) 271.
- milk yields, (26) 574; (32) 267.
- origin and characteristics, (26) 165.
- region, meteorological service, (39) 718.
- relation of body weight to feeding value, (28) 271.
- relation to farm receipts, (27) 669.
- respiration and assimilation trials, (32) 169.
- reversion in, (33) 668.
- rice hulls for, (39) 272.
- rotation of blood plasma and serum in, (29) 881.
- Roumanian, improvement, (40) 375.
- rubber seed meal for, (26) 746.
- rutting period in, (26) 768.
- sarcosporidia in, (28) 885.
- scab and its control, (40) 290.
- scarcity in Great Britain, (29) 571.
- score cards for, (26) 493.
- segregation in, (28) 570, 572.
- serum anaphylaxis in, (32) 178.
- serum, haptines in, (26) 374.
- sex control in, (33) 175.
- sex determination in, (33) 669.
- sex ratios in, (38) 574.
- sheep, and pigs, handbook, (28) 769.
- sheltering experiments, (27) 372; (28) 70.
- Shorthorn—
- cost of beef and milk production, (39) 182.
- dairy, breeding and selection, (29) 473.
- dairy type, (28) 371.
- in Argentina, (34) 264.
- in Ireland, (27) 373.
- in Missouri, (32) 865.
- inheritance of coat color, (26) 365; (30) 469; (31) 470.
- of eastern Europe, (28) 467.
- treatise, (35) 169; (39) 673.
- shrinkage in weight during transit, (30) 171.
- Simmental, notes, (31) 867.
- skin temperature, (27) 69.
- skin temperature and fattening capacity, relation, (31) 866.
- skulls in museum at Schwerin, (26) 273.

Cattle—Continued.

- slaughter tests at Smithfield Show, (31) 565.
- slaughterhouse, frequency of pregnancy in, (33) 86.
- slaughtering on the farm, (31) 266; (35) 317.
- spotted, of Upper Bavaria, (28) 371.
- stable v. open shed for, (38) 668.
- standing and lying, metabolism, (27) 500.
- sterility in, (32) 679.
- straight-horned, studies, (28) 467.
- structure of third stomach, (28) 271.
- sugar for, (33) 467.
- supply of United States, (31) 767.
- susceptibility to tuberculosis, (26) 178.
- Swiss—
- breeds, notes, (31) 371.
- characteristics, (27) 873.
- mathematical selection of, (35) 374.
- spotted, notes, (30) 567.
- Tarentaise, origin, characteristics, and value, (29) 68.
- textbook, (31) 468.
- thermal tuberculin reaction in, (26) 180.
- tick—*see also* Ticks.
- as affected by arsenical dips, (29) 287.
- as affected by climate, (26) 458.
- as affected by Roentgen rays, (28) 57.
- Australian, in Key West, (30) 554.
- Australian, notes, (28) 158.
- biology, (28) 63.
- control, (34) 479; (39) 85, 862.
- tick control in—
- Argentina, (37) 277.
- Tennessee, (29) 653.
- United States, (36) 403.
- tick—
- effect on milk production, (32) 581, 681.
- eradication, (26) 459; (27) 77, 81, 84, 163, 184, 579, 655; (28) 181; (31) 85; (32) 681; (34) 275, 679; (36) 95, 777; (37) 779.
- tick, eradication in—
- Alabama, (26) 183; (31) 483; (37) 687.
- Costa Rica, (30) 684.
- Georgia, (29) 384.
- tick—
- hereditary infection in, (30) 460.
- in Argentina, (40) 459.
- Australia, (30) 82; (38) 286.
- Guam, (35) 877.
- New Zealand, (26) 460.
- Porto Rico, (38) 761.
- incubation period in relation to heat intensity, (38) 415.
- life history, (26) 458; (29) 585.
- notes, (29) 658; (34) 851.
- oviposition of, (26) 760.
- popular account, (39) 289.
- relation to equine piroplasmosis, (31) 382.
- studies, (28) 758; (33) 750; (40) 56.
- transportation, (26) 268; (28) 770.
- treatise, (30) 170.
- trypanosomes in, (28) 284.
- tuberculin reacting, breeding, (34) 575.
- tuberculin reaction in, (27) 481.
- tuberculous, cell content of blood, (28) 283.
- Tuxer or Duxer, characteristics, (26) 873.
- twinning in, (35) 169; (40) 873.
- uniform classification for fairs, (33) 697.
- utilization of feed by, (38) 469.
- variole in chickens, (27) 685.
- vesicular bile of, (26) 678.
- Welsh black, studies, (29) 571.
- white, of Italy, (30) 869.
- wintering—
- experiments, (37) 268; 674.
- in corn belt, (38) 471.
- in Ireland, (33) 170.
- in North Carolina, (38) 870.
- on waste forages, (38) 371.
- worm nodules in, (28) 680; (31) 182.
- yellow Franken breed, monograph, (28) 170.
- young, weights and measurements, (33) 669.
- Cattle-buffalo—
- crossing experiments, (31) 266, 566, 567.
- hybrid, notes, (28) 68.
- hybrids, skull characters, (38) 65.
- Cattle-zebu—
- crossing experiments, (29) 369, 666; (30) 567.
- hybrids—
- characteristics, (32) 669.

- Cattle-zebu—Continued.
hybrids—continued.
descriptions, (28) 670.
heredity in, (28) 68.
measurements, (27) 672.
notes, (31) 664.
- Cattleya—
fly, *see* *Isosoma orchidearum*.
orchids, fumigation, (40) 352.
- Cauliflower—
carbohydrates in, (31) 11.
club root—
in South Africa, (29) 846.
notes, (34) 241.
cost of production, (29) 595.
culture, (29) 338, 639; (32) 337; (33) 238; (37) 143; (39) 345.
culture experiments, (32) 635; (33) 43.
fertilizer experiments, (31) 37; (34) 532.
germination in mercury vapor light, (30) 827.
insects affecting, (29) 338.
leaf spot or ring spot, notes, (34) 542.
monstrosities of germination in, (32) 825.
mulching experiments, (33) 534; (36) 237; (38) 344.
preparation and use, (32) 253.
ring spot, notes, (36) 145.
seed, production, (33) 226.
spot disease, description, (26) 54; (27) 249.
varieties, (32) 635; (33) 43; (36) 237.
winter, culture and marketing, (29) 338.
worms, remedies, (33) 555.
- Cauleryella—
anophelis n.sp., description, (39) 766.
aphiochaetae n.g. and n.sp., studies, (31) 851.
- Cautic soda, *see* Sodium hydrate and Sodium hydroxide.
- Cave deposits, analyses, (29) 516; (31) 122.
- Cavia spp., hybridization experiments, (28) 667.
- Caviar—
analyses, (31) 656.
artificial coloration, (27) 809.
creatin and creatinin content, (31) 760.
detection of preservatives in, (36) 561.
preparation and use, (35) 470.
studies, (30) 61.
- Cavies, breeds and breeding, (38) 577.
- Cavy, crossing experiments, (34) 464.
- Cavy, wild Brazilian, hybridization experiments, (28) 667.
- Ceanothus—
americanus, root nodules of, (35) 132.
velutinus as a source of wax and tannin, (35) 413.
- Cecidia—
of Brazil, (38) 661.
of central and northern Europe, treatise, (26) 658.
thysanopterous, of Java, (30) 250; (38) 259.
- Cecidology, science of, (36) 456.
- Cecidomyia—
catalpae in Maryland, (38) 155.
ceratoniae, notes, (40) 648.
ceratoniae, remedies, (32) 754.
destructor, *see* Hessian fly.
oxycoccana, notes, (33) 352.
oxycoccana, studies, (36) 54.
pyri, notes, (30) 53.
- Cecidomyiidae—
British, catalogue, (39) 866.
notes, (31) 455.
of Germany, (31) 158.
- Cecidostiba n.spp., descriptions, (30) 59.
- Cecropia moth, notes, (26) 656; (28) 158; (40) 754.
- Cedar—
apples—*see also* *Gymnosporangium*.
notes, (28) 151.
ashes, analyses, (35) 327.
bark rusts, notes, (30) 544.
borer, western, studies, (39) 467.
cross-arms, tests, (27) 443.
incense—
commercial importance, (38) 751.
oils of, (34) 607.
reproduction as affected by bear clover, (40) 842.
nursery blight of, (38) 53.
red, blight affecting, (30) 152.
red, culture in Germany, (30) 646.
red, for telephone poles, (30) 843.
rust, effect on apple leaves, (29) 49, 648.
rust, galls of, (38) 448.
- Cedar—Continued.
rust on apples, (33) 247; (39) 54, 150.
rust, studies, (28) 243; (38) 151.
western red—
fungus disease of, (31) 247.
leaf disease of, (36) 652.
- Cedars, list, (29) 842; (35) 44.
- Cedarwood oil, larvicidal value, (34) 359.
- Cedestis gyssellinella, notes, (34) 855.
- Cedrats, culture in California, (40) 246.
- Ceiba pentandra, notes, (31) 736.
- Celeriac, food value, (36) 863.
- Celerio lineata, notes, (28) 654.
- Celery—
as affected by formaldehyde, (26) 731.
bacterial—
diseases, descriptions, (37) 840.
diseases, notes, (37) 652.
leaf-spot, studies, (33) 245.
rot, studies and bibliography, (31) 542.
blanching, harvesting, and marketing, (37) 699.
blight—
distribution, (34) 49.
notes, (27) 849; (36) 349.
or leaf spot, notes, (35) 454.
or rust, studies, (29) 846.
treatment, (30) 348; (31) 344.
breeding experiments, (39) 542.
cooking, (31) 856.
culture, (26) 539; (29) 639; (37) 143.
culture—
experiments, (33) 534; (38) 444.
in Michigan, (29) 145.
in western Washington, (33) 793; (36) 693.
damping off, studies, (35) 844.
decay in storage, (31) 447.
decay in transit, (38) 444.
disease, description, (34) 744.
diseases—
in Michigan, (38) 545.
notes, (31) 747; (39) 353.
studies, (30) 847; (39) 753.
treatment, (33) 848; (39) 52.
early blight, notes, (35) 844.
fertilizer experiments, (40) 134.
fly, notes, (33) 860.
fly, oviposition, (40) 457.
growth and quality, (38) 444.
handling and precooling, (38) 444.
heart rot, notes, (31) 641.
heart rot, studies, (34) 244.
late blight—
spraying, (39) 550.
studies, (33) 742, 793; (40) 155.
treatment, (32) 49; (36) 450; (38) 546.
leaf scorch, description and treatment, (28) 847.
leaf spot—
notes, (32) 239, 341, 544, 545.
studies, (34) 350.
treatment, (36) 748.
melanose, studies, (35) 846.
premature seeding, (36) 237; (38) 344; (40) 444.
red spider attacking, (39) 65.
root scab, studies, (33) 547.
rot, cause, (37) 751.
rot, notes, (40) 844.
seed—
identification, (30) 862.
production in Canada, (33) 226; (34) 635.
treatment, (39) 238.
soups, examination, (30) 666; (31) 658.
storage experiments, (38) 142.
storage investigations, (35) 234.
wild, growing for wild ducks, (29) 373.
- Cell—
activity, mechanisms of, (26) 106.
content of milk, studies, (26) 370.
division—
in Moniezia, (28) 272.
new force in, (26) 163.
physiology of, (36) 822.
studies, (40) 517, 518.
energy and respiration, notes, (30) 669.
functions, chemical, method for study, (26) 21.
membranes, chemistry and structure, (34) 626.
membranes, studies, (28) 37; (30) 28.
metabolism, review of literature, (32) 854.
substances, oxidizing and reducing, detection and significance, (31) 277.
walls, differential permeability of, (30) 826.

- Cellar—
 societies, (40) 893.
 walls, waterproofing and insulating, (33) 490.
- Cellia pulcherrima, studies, (30) 361.
- Cellobiose, utilization in nitrogen fixation, (26) 625.
- Cellose, acetylated derivatives, optical rotatory powers, (36) 202.
- Cells—
 animal, *see* Animal cells.
 as affected by castration, (26) 364.
 bibliography, (33) 168.
 biochemistry, physics, and morphology, (27) 174.
 chemistry, (27) 107.
 chemistry and physics of, (32) 78.
 colloidal and physical chemistry of, (33) 28.
 counting in milk, (26) 370.
 germ, in mammalian ovary, development, (26) 470.
 in milk, studies, (31) 372.
 movements of starch grains within, (27) 426.
 permeability, (33) 127.
 physiology of, (26) 163.
 plant, *see* Plant cells.
 polarity in, (28) 765.
 structure, (27) 573.
- Cellular physiology, studies, (28) 362.
- Cellulase, notes, (28) 18.
- Celluloid cylinders for inoculation chambers, (37) 549.
- Cellulose—
 apparatus for digesting, (35) 206.
 as affected by ozone, (30) 711.
 as source of—
 dextrose in digestion, (26) 873.
 energy for nitrogen fixation, (29) 527.
 assimilation by pigs, (32) 170.
 bacterial digestion, (31) 827.
 chemistry, treatise, (28) 312.
 content of germinating seeds, (29) 525.
 decomposition—
 by microorganisms, (31) 14.
 in manures and soils, (30) 219.
 in moor soils and peat, (31) 25.
 in soils, (36) 30.
 relation to nitrogen economy of nature, (28) 720; (30) 424.
 destruction—
 by fungi, (34) 136.
 by microorganisms, (28) 627.
 in soils, (26) 825; (29) 528.
 detection, chlorzinc-iodid reaction, (30) 415.
 determination, (26) 363; (27) 312; (28) 206, 615, 711, 805; (29) 506; (30) 315; (32) 300, 314, 716.
 determination—
 apparatus for, (40) 410.
 in feeding stuffs, etc., (33) 14.
 finely powdered materials, (27) 612.
 flax stems, (32) 415.
 flour, (33) 314.
 linseed cake, (26) 714.
 meal, (40) 206.
 straw, (32) 666.
 wheat, (40) 14.
 wood, (39) 614.
 with nitric acid, (31) 17.
 digestibility, (26) 363; (29) 65; (35) 559.
 digestible, detection in feces, (27) 312.
 digestion by sheep and pigs, (31) 667.
 distillation in vacuo, (38) 708.
 distillation under reduced pressure, (40) 110.
 effect on soil bacteria, (30) 125, 217.
 effect on soil nitrogen, (35) 218.
 fermentation, (29) 528.
 fermentation by thermophilic bacteria, (31) 310.
 fermentative cleavage, (28) 802.
 for laying hens, (34) 179.
 from millet, (32) 117.
 furnace for incineration, (35) 206.
 humification, (38) 26.
 hydrolysis, (30) 615; (31) 310.
 in bacteria, (36) 501.
 in mixed rations, digestibility, (32) 70.
 manufacture from bamboo, (27) 647.
 manufacture from vine shoots, (26) 613.
 preparation and use, (30) 315.
 production from wood, (28) 50.
 studies, (29) 201.
 treatise, (30) 202; (37) 112; (39) 614.
- Cellulose—Continued.
 variations of in leaves, (29) 827.
 waste liquors as source of potash, (34) 328.
 Celosia empress as a host of eelworm, (34) 349.
- Cement—*see also* Concrete.
 as affected by—
 alkali, (27) 89; (28) 86; (37) 788.
 alkali salts and sea water, (29) 686.
 sulphid, (38) 691.
 various substances, (29) 891.
 asphalt, penetration tests, (34) 685.
 autoclave boiling test for, (28) 290.
 blended Portland, (38) 691.
 concrete in drain tile, proportioning, (40) 787.
 determination of fineness, (30) 888.
 drain tile, durability in alkali soils, (39) 86.
 drain tile in alkali soils, (40) 386.
 dust—
 as source of potash, (37) 218, 630, 817.
 effect on citrus vegetation, (35) 313.
 effect on fruit trees, (27) 152; (31) 150.
 fume as source of potash, (34) 328.
 mill dust, fertilizing value, (39) 429.
 mills, potash from, (36) 625; (38) 123, 124; (39) 328, 329.
 mortar—
 action in different salt solutions, (35) 291.
 as affected by hydrated lime, (30) 889.
 as affected by lime, (40) 786.
 as affected by temperature, (33) 589.
 containing lime, tensile strength, (36) 286.
 paste, determination of consistency, (31) 91.
 Portland—
 control of initial setting time, (29) 488.
 high-pressure steam test for, (35) 687.
 methods of testing and of analysis, (29) 290.
 mortars and concretes, (39) 86.
 setting and hardening, (28) 891.
 specifications, (29) 290.
 thermal activities in during setting, (31) 91.
 rollers, construction, (29) 688.
 sand, investigations, (29) 183.
 sand, manufacture, (30) 689.
 sieves, tests, (30) 888.
 specifications, (37) 386.
 storage, (27) 386.
 testing, (31) 91.
 tests of strength, (30) 87.
 tile, curing, (27) 586.
 tile, solubility, (31) 92.
 treatise, (35) 289.
 tuft, tests, (28) 589.
 use in farm structures, (34) 787.
 use in irrigation structures, (37) 787.
 vats, coatings for, (34) 287.
 works, by-product potash, (40) 128.
- Cenarium abietis—
 injurious to white pines, (26) 752.
 notes, (28) 750; (32) 845.
- Cenchrus echinatus, notes, (26) 361.
- Centaurea—
 cyanus—
 coloration of flowers, (31) 324.
 effect on yield of rye and barley, (30) 531.
 scabiosa, root system, (37) 542.
 spp., drought resistance, (36) 734.
- Centipedes—
 and their venom, (35) 858.
 house, notes, (32) 353.
 summary of information, (39) 768.
- Centistidea ectoedemiae n.sp., description, (31) 554.
- Centothea malabarica, notes, (26) 361.
- Central Moor Commission, report, (31) 830.
- Centralblatt für Bakteriologie, index, (27) 476.
- Centrifugal force, effect on chemical systems, (28) 168.
- Centrifuge, use in analytical chemistry, (36) 111.
- Centro-epigenesis, notes, (26) 365.
- Centrosema—
 plumieri as a green manure, (36) 324.
 plumieri, fertilizing value, (34) 34.
 pubescens, culture, (34) 736.
- Cephaelin derivatives, protozoocidal and bacteriocidal action, (38) 180.
- Cephalandria indica, analyses, (31) 366.
- Cephauros—
 henningsii, description, (27) 450.
 mycoidea, notes, (29) 345; (39) 849.
 notes, (30) 354.
 sp. on rubber, (33) 449; (38) 53.

- Cephaleuros**—Continued.
virescens—
 in Sumatra, (39) 57.
 notes, (31) 55; (32) 445; (34) 55, 249, 744;
 (37) 253; (38) 354, 758.
 on cacao, (40) 851.
- Cephalin**—
 fatty acids of, (31) 608.
 thromboplastic action, (37) 877.
- Cephalobus dubius**, studies, (40) 267.
- Cephalocroton puschelii**, analyses and digestibility, (32) 167.
- Cephalonema polyandrum**, fiber from, (37) 535.
- Cephalonomia meridionalis** n.sp., description, (31) 355.
- Cephalosporium**—
lecanii—
 description, (33) 459.
 notes, (26) 553; (27) 358; (28) 453.
 lefrovi, association with greenhouse white fly, (34) 452.
sacchari—
 n.sp., description, (30) 650.
 notes, (34) 49; (35) 49; (37) 452; (40) 47, 157.
 sp., notes, (28) 733.
 sp. on coffee, (32) 646.
- Cephalothecium**—
 infection of wheat by, (26) 747.
- roseum**—
 as affected by cold, (34) 538.
 notes, (31) 641; (37) 550.
 relation to apple rot, (33) 348.
 temperature relations, (33) 545; (36) 649.
 sp. on pecan, (39) 553.
- Cephenomyia**—
abdominalis n.sp., description, (34) 64.
 biology, (37) 565.
pratti n.sp., description, (34) 554.
- Cephidae** larvae, notes, (40) 655.
- Cephus**—
 American species, (40) 655.
occidentalis, habits, (37) 855.
occidentalis, studies, (34) 250.
- Cerambycid** larvae—
 determination of abdominal and thoracic areas, (36) 258.
 Henriksen's review, (34) 361.
- Cerambycidae**—
 North American, classification and biology, (33) 360.
 of California, (40) 861.
- Cerambycobius**—
cyaniceps, notes, (26) 861.
townsendi n.sp., description, (30) 59.
- Cerambycoidea**, notes, (27) 756.
- Cerambyx heros**, biology, (36) 257.
- Ceramica picta**, notes, (40) 648.
- Ceraptroceroides cinctipes** n.g. and n.sp., description, (35) 761.
- Ceratitis**—
 African species, (29) 760.
- capitata**—
 breeding in bananas, (29) 54.
 control by poisoned bait, (34) 360.
 control in Hawaii, (34) 758.
 danger of introduction, (39) 467.
 development in lemons, (35) 259.
 in environs of Paris, (35) 259.
 in Hawaii, (38) 658; (40) 62.
 notes, (27) 359; (28) 62, 657; (29) 234, 257;
 (30) 361, 845; (34) 856; (37) 565.
 parasites of, (35) 760; (38) 659.
 remedies, (29) 656; (31) 757.
 studies, (32) 56, 655.
 trapping and poisoning, (40) 356.
 spp. in Africa, (31) 455.
- Ceratocampidae**, monograph, (32) 850.
- Ceratodon purpureus**, direct assimilation of organic carbon, (40) 325.
- Ceratodrilus thysanosomus** n.g. and n.sp., description, (35) 254.
- Ceratonia**—
amyntor, life history, (32) 850.
catalpae, see *Carob*.
- Ceratonia siliqua**, see *Carob*.
- Ceratophyllum demersum**, culture for wild ducks, (33) 251.
- Ceratophyllus**—
acutus, transmission of plague-like disease by, (26) 461.
- Ceratophyllus**—Continued.
famulus, notes, (37) 879.
- fasciatus**—
 biology, (27) 58.
 bionomics of, (31) 353.
 distribution on rats, (29) 755.
 life history, (31) 552.
 longevity of, (30) 757.
 notes, (28) 255, 356; (33) 159.
 relation to plague, (33) 749.
 remedies, (31) 353.
gallinae, see *Hen flea*.
silantiewi, relation to plague, (26) 252.
 spp., notes, (28) 757.
- Ceratopogoninae**—
 blood-sucking, of Brazil, (29) 54; (32) 450.
 new, from Peru, (34) 553.
 notes, (31) 455; (32) 851.
 review of literature, (30) 159.
- Ceratostoma juniperinum** in France, (37) 253.
- Ceratostomella** spp., studies, (27) 354.
- Cerceris**—
 n.spp., notes, (35) 262.
 spp., bionomics, (35) 468.
- Cerchysius**—
 females, of America, (39) 364.
 sp., parasitic on black scale, (26) 555.
- Cercidiphyllum japonicum**, food plant of purple scale, (26) 756.
- Cercis**—
canadensis, relation between ovules and seeds, (31) 523; (33) 130; (36) 628.
 fruit, physico-chemical constants of, (31) 427.
- Cercomonas termo**, notes, (29) 316.
- Cercopaeus artemisiae**, notes, (35) 364.
- Cercopids** of Trinidad, (30) 250.
- Cercospora**—
acrocomiae n.sp., description, (39) 52.
agatidis n.sp., description, (30) 51.
aleuritidis n.sp., description, (27) 848.
apii, see *Celery blight*.
beticola—
 climatic conditions affecting, (35) 47.
 description and treatment, (28) 847.
 effect on composition of sugar beets, (31) 436.
 notes, (28) 649; (29) 153; (30) 47; (32) 50;
 (33) 851; (35) 245, 350, 750; (37) 249.
 studies, (34) 845; (40) 344.
 treatment, (26) 648; (29) 48.
- carbonacea* n.sp. on yam, (39) 248.
- cearae*, notes, (28) 241.
- cerasella*, notes, (27) 849.
- chrysanthemi* n.sp., description, (27) 848.
- citrullina* on watermelons, (35) 749.
- coffeicola*, notes, (30) 751; (31) 646; (32) 645, 749;
 (38) 51.
- concoers, description, (28) 548.
- coryli* n.sp., description, (37) 550.
- cucurbitae*, notes, (37) 550.
- epigaeina*, notes, (26) 341.
- fraxini*, notes, (35) 454.
- fusca*, description, (30) 452.
- fusca*, treatment, (37) 756; (39) 553.
- guizotiae* n.sp., description, (35) 454.
- helvola medicaginis*, notes, (28) 52.
- herrerana* n.sp., description, (35) 353.
- heveae* n.sp., notes, (37) 253.
- leaf spots in Indiana, (39) 52.
- longipes*, studies, (38) 851.
- lumbrioides* n.sp., description, (35) 45.
- medicaginis*, dissemination, (36) 450.
- melonis*, notes, (32) 641.
- melonis*, studies, (35) 750.
- musae*, notes, (36) 347; (38) 651.
- n.spp., descriptions, (37) 748.
- n.vars., descriptions, (37) 749.
- nicotianae*, notes, (30) 47.
- on celery, (39) 753.
- persicae*, notes, (27) 850.
- personata*—
 notes, (29) 347; (33) 741; (37) 349, 452, 551.
 studies, (32) 546; (34) 645.
- raciborskii*, notes, (36) 348.
- sacchari*, notes, (29) 345; (40) 51.
- sp. on grapes (36) 541.
- sp. on jute, (36) 348.
- sp. on pistachio, (34) 843.
- spp., notes, (32) 749; (39) 453.
- sp. on pigeon peas, (34) 52.

Cercospora—Continued.

- spp. on sugar cane, (38) 550; (40) 157.
 - theae, notes, (33) 545.
 - vaginae, notes, (26) 445; (29) 45; (30) 541; (36) 846; (40) 47.
 - vaginae, studies, (38) 851.
 - vignae, notes, (35) 749.
 - vitiphylla, notes, (36) 647.
 - zygophylli n.sp., description, (35) 844.
- Cercosporella—
- epimedi n.sp., description, (35) 454.
 - herpotrichoides, notes, (27) 747; (37) 248.
 - lini n.sp., description, (35) 454.
- Cercosporina ricinella, notes, (33) 545.

Cereal—

- black stem rust, notes, (37) 552.
 - cropping, relation to soil sanitation, (29) 516; (32) 480.
 - crops, native, in Punjab, (40) 230.
 - diseases—see also specific hosts.
 - and pests, review, (36) 542.
 - descriptions, (30) 351.
 - in Italy, (38) 351.
 - Russia, (34) 842.
 - Saxony, (32) 749.
 - Switzerland, (37) 47.
 - notes, (29) 242, 845; (31) 841; (39) 452; (40) 344, 747.
 - reducing losses from, (39) 454.
 - review of literature, (30) 648.
 - studies, (30) 846.
 - treatment, (32) 545; (34) 541; (35) 46; (37) 247.
 - downy mildews, notes, (30) 845.
 - "drunk bread" disease, notes, (34) 842; (35) 453.
 - dry spot, relation to fertilizers, (29) 46.
 - dust as a feeding stuff, (30) 565.
 - dust explosions, (36) 686.
 - Field Station in California, (29) 99.
 - fly, winter, control in Kief, (38) 257.
- foods—
- analyses, (34) 661; (35) 558, 859.
 - dietary deficiencies, (38) 869.
 - examination, (30) 664; (31) 760.
 - history, (36) 560.
 - nutritive value and cost, (38) 663.
 - preparation, (38) 365.
 - use in the diet, (37) 668.
- foot disease, investigations, (30) 747.
- foot rot or stalk disease, notes, (30) 648; (32) 145, 545, 641, 843; (33) 445.
- foot rot or stalk disease, studies, (31) 542; (33) 51.
- hybrids, unusual, (30) 525.
- leaf beetle, life history and control, (34) 857.
- leaf spot, notes, (29) 46.
- leaf spot, studies, (28) 545.
- market of Rotterdam, (39) 797.
- mildew in France, (34) 243; (35) 149.
- mildew, notes, (36) 846; (40) 844.
- of ancient America, (39) 532.
- pathologists, conference, (39) 549.
- products—
- ash analyses, (29) 861.
 - determination of acidity, (36) 299.
 - insects affecting, (32) 246.
 - methods of analysis, (29) 799.
 - middlemen's function in, (33) 787.
- proteins, effect on growth, (33) 465.
- rust fungi, teleutospore formation, (34) 745.
- rust in Denmark, (36) 247.
- rust, treatment, (26) 846.
- rusts—
- control, (39) 52.
 - culture experiments, (30) 846.
 - germination of uredospores, (27) 149.
 - in Canada, (34) 51.
 - in South America, (36) 542.
 - notes, (32) 340.
 - overwintering and distribution in South America, (38) 148.
 - propagation, (31) 842; (33) 145.
 - resistance to, (40) 745.
 - specialization, (37) 149.
 - studies, (31) 146; (33) 245, 345, 546; (36) 542; (40) 249, 641.
 - wintering over, (33) 445, 546.
- seedlings as affected by narcotics, (31) 730.
- smuts—
- in Argentina, (38) 148.
 - life history and treatment, (28) 445.
 - notes, (32) 340; (40) 845.

Cereal—Continued.

- smuts—continued.
 - spore germinations of, (31) 642.
 - treatment, (38) 648; (39) 248, 353.
 - snow mold, studies, (29) 47, 244.
 - stalk disease, investigations, (28) 445.
 - station in California, (28) 98.
 - stem rot, notes, (31) 147.
 - streak disease, treatment, (35) 149.
 - zapal or zakvat, studies, (29) 244.
- Cereals—see also Barley, Oats, Wheat, etc.
- analyses, (26) 45.
 - ancient classification, (31) 830.
 - and cereal products, methods of analysis, (33) 258.
 - and leguminous plants, associative growth, (28) 720.
 - area and production, 1907–1911, (26) 792.
 - as affected by—
 - parasitic fungi, (31) 541.
 - precipitation and temperature, (28) 41.
 - rain and temperature, (27) 15.
 - soil volume and available plant food, (31) 132.
 - soils, (26) 814.
 - behavior toward fungi, (32) 426.
 - bread-making value, (32) 760.
 - breeding, (28) 633, 828.
 - breeding—
 - and improvement in Sweden, (39) 833.
 - and improvement in Uruguay, (39) 835.
 - experiments, (29) 226; (31) 830; (33) 331, 831.
 - experiments, methods, (40) 232.
 - for drought resistance, (28) 537.
 - for rust resistance, (28) 537; (39) 550.
 - chlorophyll content, variations in, (32) 220.
 - cold resistance of, (30) 524.
 - competition in, (27) 430.
 - consumption, 1902–1911, (40) 93.
 - cooked, analyses, (29) 660.
 - culture, (30) 435; (37) 96.
 - culture—
 - after soil sterilization, (28) 537.
 - continuous, (27) 734; (31) 226.
 - experiments, (26) 131; (27) 438; (29) 226, 331, 425; (31) 732, 733; (32) 528; (33) 227, 633; (34) 736; (37) 733; (38) 433, 527; (39) 128; (40) 624.
 - in Argentina, (40) 625.
 - Hawaii, (32) 730.
 - India, (29) 736.
 - Novo-Russia, (26) 535.
 - Texas Panhandle, (29) 428; (35) 440.
 - Washington, Oregon, and Idaho, (38) 824.
 - Wyoming, (36) 33.
 - under dry farming, (33) 632; (39) 736.
 - under irrigation, (28) 839.
 - cytological studies, (26) 325.
 - detection of ustilaginous spores in, (26) 408.
 - determination of—
 - moisture in, (27) 713.
 - smut spores in, (36) 146.
 - specific gravity, (28) 22.
 - digestibility, (33) 361.
 - disease resistance in, (36) 145.
 - effect of root development on tillering power, (27) 231.
 - embryology, (30) 633.
 - fermentation in, (29) 269.
 - fertilizer experiments, (26) 331, 425, 733; (28) 828; (30) 229, 626; (31) 29, 133, 226, 328, 733; (32) 37, 622, 630; (37) 323, 521, 827; (38) 433, 527; (40) 624.
 - fertilizers for, (32) 827.
 - fertilizing value, (31) 320.
 - frost injury, (31) 541, 542; (38) 148.
 - Fusarium diseases of, (26) 446.
 - germination in light and darkness, (30) 633.
 - green manuring experiments, (40) 24.
 - ground, handbook, (29) 564.
 - growth—
 - as affected by meteorology, (29) 510.
 - in association with weeds, (38) 734.
 - studies, methods, (38) 526.
 - hail injuries to, (33) 127.
 - harrowing experiments, (26) 331.
 - heredity of albinism in, (31) 329.
 - history of, (31) 131.
 - hybridization experiments, (26) 733; (34) 228.

Cereals—Continued.

- identification, (36) 541.
- improvement, (32) 333.
- improvement—
 - at Svalof, (40) 823.
 - by selection, (29) 532.
 - in Italy, (37) 827.
- in the diet, (40) 762.
- insects affecting, (27) 452; (30) 53; (33) 746; (34) 651; (37) 156, 895; (38) 459, 556.
- international statistics, (33) 396.
- introduction into Philippines, (27) 537.
- irrigation, (29) 736.
- irrigation experiments, (28) 828; (29) 226; (38) 631; (40) 331.
- laboratory manual, (30) 696; (34) 598.
- light v. heavy kernels, (28) 536.
- liming experiments, (30) 724.
- lodging in relation to vascular bundles, (33) 352.
- lodging, prevention, (30) 136.
- maltase content, (31) 204.
- "May-sick" disease of, (30) 399.
- mechanical winter covering, (37) 48.
- microscopy of, (32) 715.
- of Chile, (38) 336.
- of India, malting capacity, (40) 808.
- paper carton for protection from insect attack, (30) 53.
- phosphorus content, (26) 501.
- planting and harvesting dates, (26) 532.
- prices in Bern, (32) 162.
- prices in France for 1919, (40) 390.
- production in—
 - arid districts, (40) 523.
 - Nebraska, (40) 194.
 - 1913, (31) 392.
 - Spain, (30) 791; (35) 393; (37) 827; (40) 434, 594, 793.
- purchasing and use, (38) 867.
- pure line breeding, (35) 831.
- pure types, variation in, (30) 334.
- purin content, (40) 205.
- recipes, (37) 670.
- resistance to diseases and insects, (26) 246.
- right- and left-handedness in, (30) 335.
- ripening under wire netting, (30) 633.
- root development, (30) 633.
- root systems of, (31) 515, 830; (39) 230.
- secondary rootlets, (40) 32.
- seed, cleaning and grading, (30) 488.
- seed production, (31) 524.
- seedling experiments, (32) 36.
- selection experiments, (40) 330.
- selection, rod-row system, (40) 232.
- sensitiveness to fungicidal treatment, (29) 151.
- small v. large seed, (38) 229.
- snow mold affecting, (31) 343.
- spring-sown, culture experiments, (36) 830.
- spring-sown, varieties, (36) 830.
- stalk formation studies, (31) 227.
- statistical notes, (40) 625.
- statistics, international, (34) 290.
- stooling in, (30) 235.
- stored, insects injuring, (39) 463.
- straw blight affecting, (27) 747.
- studies, (40) 232, 233.
- temporary roots in, (35) 135.
- textbook, (32) 659.
- use in the dietary, (29) 862.
- varietal differences in, (31) 227.
- varieties, (26) 733; (27) 438; (28) 828; (29) 138, 226, 426, 427; (30) 229, 829; (31) 133, 732, 829; (32) 37, 132, 630; (33) 831; (34) 736; (37) 733; (38) 433.
- varieties, new Swedish, (39) 833.
- variety tests, (39) 128, 334, 337, 799; (40) 330.
- variety tests, new method for, (31) 830.
- water content as affected by cooking, (26) 462.
- water requirements, (31) 729; (38) 227.
- winter, rest period in, (30) 732.
- wintering of, (26) 733.
- winterkilling, (38) 415; (39) 430, 441; (40) 329.
- yields, analysis, (28) 536.

Cerebrospinal—

- fever organism, agglutination test, (40) 82.
- meningitis—
 - epizootic, in horses, (28) 784.
 - in horses, (26) 786; (27) 684; (28) 184, 783; (29) 304, 499, 587; (30) 285, 685.

Cerebrospinal—Continued.

- meningitis—continued.
 - outbreak in Kansas and Nebraska, (29) 587.
 - studies, (28) 378, 886.
- Cerebrum, effect on metabolism of matter and energy, (30) 466.
- Ceresa—
 - basalis, notes, (32) 651.
 - bubalus, see Buffalo tree hopper.
 - militaris n.sp., description, (38) 858.
 - sp., notes, (32) 651.
 - spp. north of Mexico, (38) 858.
 - spp. ovipositing in apple, (38) 156.
- Cereus—
 - flowers, self-warming in, (36) 226.
 - forbesii as a host of mistletoe, (29) 352.
- Cerin, notes, (31) 312.
- Cerium—
 - effect on development of seedlings, (31) 325.
 - effect on permeability, (34) 34.
 - effect on Spirogyra, (38) 27.
 - oxid; effect on germination of seeds, (29) 528.
 - salts, effect on wheat, (31) 218.
- Cerodonta—
 - dorsalis, studies, (36) 256; (40) 169.
 - femorialis, notes, (37) 255.
 - femorialis, studies, (37) 160.
- Ceromasia sphenophori—
 - introduction into Hawaii, (33) 256; (36) 257.
 - life history and breeding, (32) 350.
- Ceropales foxii n.sp., description, (36) 551.
- Ceroplastes—
 - clirripediformis, notes, (28) 453.
 - grandis in Argentina, (40) 165.
 - janelensis, notes, (30) 657.
- Ceroplastodes deani n.sp., description, (39) 255.
- Cerotoma—
 - ruficornis, studies, (37) 256.
 - trifurcata, see Bean leaf-beetle.
- Cerotrioza n.g., erection, (40) 262.
- Cervus—
 - elaphus, notes, (27) 371.
 - spp., breeding experiments, (29) 171.
- Cesspool and septic tank combined, description, (31) 190.
- Cesspools, construction, (36) 892.
- Cestode parasites, new, of fowls, (33) 775.
- Cestodes—
 - avian, new species, (34) 281.
 - avian, studies, (26) 561.
 - injurious to muskrats, (29) 484.
 - life history, (37) 163.
 - of Australia, (32) 399.
 - parasitic in birds, (31) 184.
 - parasitic in equines, (27) 553.
 - polyradiate, notes, (37) 361.
 - proteocephalid, monograph, (32) 853.
 - reproduction, (39) 655.
- Ceuthophilus pacificus, notes, (27) 658.
- Ceuthospora punicea, notes, (37) 550.
- Ceutorhynchus—
 - marginatus, notes, (36) 555; (37) 568.
 - pleurostigma (sulcicollis), notes, (35) 467.
 - portulacae n.sp., description, (35) 365.
- Chaemerops humuli, notes, (28) 754.
- Chaeretymma minuta n.sp., description, (38) 565.
- Chaetoceraetostoma hispidum n.g. and n.sp., notes, (40) 160.
- Chaetocnema—
 - ectypa, notes, (33) 746.
 - ectypa, studies, (36) 658.
 - quadricollis, studies, (40) 754.
 - spp., notes, (26) 856.
- Chaetodiploia—
 - anthurii n.sp., description, (37) 550.
 - nonvalidity of genus, (34) 242.
- Chaetogadia monticola, notes, (27) 656.
- Chaetomidium barbatum n.sp., description, (34) 226.
- Chaetomium spirochaete on sweet peas, (32) 446.
- Chaetophorus spp., notes, (28) 655.
- Chaetopsis aenea, see Onion fly, barred-winged.
- Chaetospaeria eximia n.sp., notes, (37) 148.
- Chaetothyrium colchicum n.sp., description, (36) 245.
- Chaff scale, notes, (28) 854.
- Chafing-dish dainties, salads, and sandwiches, (32) 560.
- Chagas disease in Argentina, studies, (34) 580.

- Chaitophorus**—
 acris, biology and anatomy, (37) 55.
 delicata n.sp., description, (29) 654.
 japonicus n.sp., description, (40) 165.
 maculatus, studies, (32) 247.
 negundinis, *see* Box elder aphid.
 spp., dimorphs, (40) 165.
- Chalaropsis thielavioidea** n.g. and n.sp., description, (39) 53.
- Chalastogastra**, classification, (26) 863.
- Chalcid**—
 flies—
 in alfalfa seed, (32) 454.
 new, of Australia, (37) 569; (38) 768.
 new, of California, (37) 360, 467.
 new, of Maryland, (37) 766.
 new, of North America, (38) 565.
 of North America, (37) 162.
 West Indian and North American, (39) 869.
 parasites, immunity to hydrocyanic gas, (38) 460.
- Chalcididae**—
 of Australia, (39) 154.
 of wild fig in India, Ceylon, and Java, (38) 565.
- Chalcids**—
 injurious to forest tree seeds, (28) 657.
 injurious to grain crops in Russia, (33) 563.
 new, from Maryland, (36) 556.
- Chalcidoidea**—
 bred from *Glossina morsitans* in Northern Rhodesia, (35) 263.
 new, of West Coast of Africa, (37) 667.
 notes, (26) 152.
 of Australia, (28) 563.
 phoresy in, (40) 459.
- Chalcis**—
 abiesae, notes, (40) 760.
 amenocles from *Glossina*, (39) 566.
 calliphorae, description, (36) 360.
 calliphorae, notes, (38) 466.
 coloradensis, parasitic on locusts, (32) 60.
 compsiluræ n.sp., description, (29) 562.
 hammari n.sp., description, (34) 66.
 ovata, notes, (26) 758.
 ovata, parasitic on alfalfa caterpillar, (32) 58.
 pandora n.sp., description, (31) 459.
 pomonae n.sp., description, (28) 162.
 sp., notes, (26) 151.
 thracis, parasitic on banana leaf roller, (26) 857.
- Chalcodermus aeneus**, notes, (37) 659.
- Chalcophora mariana**, notes, (27) 863.
- Chalepus**—
 dorsalis, notes, (29) 353; (30) 657; (36) 257.
 rubra, notes, (40) 357.
 spp., notes, (28) 157; (35) 356.
- Chalicodoma** spp., treatise, (32) 758.
- Chalioides junodi**, notes, (29) 758.
- Chalk**—
 as neutralizer for sour milk bacteria, (29) 877.
 deposits in Yonne, France, (27) 422.
 effect on soil fertility, (32) 399; (34) 221.
 fertilizing value and use, (40) 322.
 ground, for grassland, (40) 824.
 use on clay soils, (36) 519.
- Chalogynus osborni** n.sp., studies, (40) 265.
- Chamaebatia foliolosa**, effect on forest reproduction, (40) 842.
- Chamaecrista diphylla**, culture, (34) 736.
- Chamaecyparis**—
 nootkatensis, biennial fructification, (29) 543.
 obtusa, fertilizer experiments, (38) 624.
 obtusa wood, essential oil of, (34) 802.
- Chamber of Horticulture** for Great Britain, (40) 500.
- Chamomile**, dissemination by farm animals, (26) 839.
- Champagne**—
 composition in relation to effervescence, (35) 647.
 effervescence of, (36) 113.
- Changa**—
 notes, (31) 452; (36) 355.
 parasites of, (29) 653.
 remedies, (33) 452.
 studies, (38) 762.
- Chaparral**—
 biologic and economic aspects, (40) 842.
 eradication by goats, (29) 543.
- Charadrius dominicus fulvus**, migration, (27) 355.
- Charaeas graminis**, notes, (38) 361.
- Charbon**, *see* Anthrax.
- Charcoal**—
 action on sugar solutions, (36) 807.
 as dressing for forest seed beds, (32) 748.
 as filler for feeding stuffs, (30) 672.
 as medium for plant growth, (33) 540.
 burning in Japan, (35) 347.
 decolorizing efficiency, (35) 612.
- Chard**—
 fertilizer experiments, (26) 631.
 varieties, (26) 631.
- Charips xanthopsis**, destructive to citrus plant lice, (26) 755.
- Charitopodinus** n.g., erection, (40) 266.
- Charlock**—*see* Mustard, wild.
- oil, chemistry and use of, (35) 412.
- Chatopsis aenea**, notes, (29) 454.
- Chaulognathus pennsylvanicus**, fungus diseases of, (26) 252.
- Chayote**—
 culture experiments, (30) 632.
 culture in Louisiana, (29) 534.
 diseases, notes, (37) 755.
 notes, (29) 461; (30) 532; (34) 835.
- Cheese**—
 acid rennet bacteria of, (26) 881.
 acidity, (37) 373.
 adulteration and misbranding, (28) 776.
 American, in England, (35) 379.
 analyses, (26) 80, 171, 479; (29) 59, 376, 863; (30) 208; (35) 558; (38) 781.
 as affected by—
 alkali water, (27) 283.
 feeding stuffs, (29) 173.
 salt, (28) 278.
 bacterial flora, (27) 284.
 "Bankrote," red coloring in, (29) 376.
 bibliography, (31) 176.
 blue-veined or Dorset "Viny", making, (33) 578.
 box, description, (36) 874.
 brands, State and National, (40) 476.
 Brindza, bacteriology of, (33) 277.
 brine salting, (30) 275.
 brine-soluble compound in, (26) 212; (29) 805.
 Brinsen, manufacture, (27) 679.
 Bulgarian and Kaschkawal, description, (37) 273.
 Bulgarian, manufacture and composition, (40) 777.
 buttermilk, manufacture, (27) 74; (31) 874; (33) 382.
- Caerphilly**—
 manufacture, (30) 77.
 manufacture and quality, (29) 676.
 manufacture in Ireland, (26) 372.
- Jamembert**—
 bacterial studies, (35) 177.
 control in France, (37) 176.
 keeping, (27) 777.
 manufacture, (30) 378; (32) 176.
- Cheddar**—
 analyses, (40) 865.
 bacteria in, (31) 476.
 changes in during ripening, (37) 373.
 chemistry of, (28) 114.
 cold storage, (27) 377.
 factors affecting texture, (31) 576.
 factors affecting yield and moisture content, (30) 877.
 flavor of, (31) 476.
 fruity or sweet flavor in, (31) 79.
 manufacture, (29) 475; (40) 880.
 manufacture from pasteurized milk, (27) 74; (28) 581; (29) 475; (31) 874; (33) 175.
 prevention of polynuritis by, (31) 762.
 ripening studies, (27) 879; (28) 78, 879.
 shrinkage in, (32) 270.
- Cheshire**, manufacture, (26) 778; (31) 375.
- chromogenic microorganisms** of, (36) 477.
 coating, (27) 377; (31) 375.
 color, feeding to cows, (38) 680.
 coloring experiments, (27) 777.
 comparison of types, (29) 564.
 composition, (26) 880; (28) 374.
 composition and characteristics, (34) 380.
 composition and quality, (36) 663.
 control in Holland, (31) 376.
 cost of making, (26) 82; (27) 377.
 cottage, (39) 267.

Cheese—Continued.

- cottage—
 - as a food, (37) 669.
 - making, (37) 686; (38) 78, 178.
 - metallic flavor in, (35) 277.
 - recipes, (39) 267.
- Coulommier, manufacture, (27) 375; (29) 777; (33) 765.
- cow pot, analyses, (28) 278.
- cream—
 - fat content, (26) 778.
 - manufacture, (27) 375.
 - manufacture and analyses, (32) 176.
- curd, iron content, (27) 811.
- curd knife, description, (31) 875.
- Danish, fat content, (33) 81.
- decomposition by enzymes of rind flora, (32) 175.
- descriptions and requirements, (35) 110.
- determination of—
 - acidity, (31) 613.
 - fat content, (26) 276; (27) 312.
 - proteolysis in, (30) 415.
 - total solids, (32) 414.
- determining yield of, (26) 478.
- digestibility as compared with beef, (26) 761.
- diminution of fats in during ripening, (31) 475.
- discoloration, studies, (26) 479.
- dishes, recipes, (31) 656.
- Dorsel-Blue, manufacture and quality, (29) 676.
- Edam—
 - composition and control, (34) 273.
 - "cracking" of, (36) 673; (37) 176.
 - factors affecting water content of curd, (30) 179.
 - faulty "Knijpers" in, (30) 179.
 - investigations, (27) 678.
 - preparation, (37) 373.
- Emmental—
 - bacteria in, (31) 478, 772.
 - composition, (28) 278.
 - discoloration of, (26) 479.
 - formation of eyes in, (37) 875.
 - gases of, (28) 77.
 - gassy fermentations in, (31) 477, 772.
 - manufacture, (26) 372; (28) 475, 583; (30) 778; (32) 870.
 - starters for, (32) 776.
 - estimating yield, (28) 177.
 - examination, (30) 664.
 - experiment station at Lodi, report, (28) 374.
- exports—
 - and imports of Canada, (30) 574.
 - from Canada, (29) 673; (39) 283.
 - from Italy, (30) 575.
- eye formation in, (28) 77.
- factories—
 - construction, (32) 889.
 - cooperative, in Minnesota, (38) 178.
 - cooperative, in Wisconsin, (28) 895; (38) 293.
 - cooperative, organization, (32) 893.
 - in Minnesota, (37) 777.
 - in Norway, (29) 897.
 - in Wisconsin, (30) 679.
 - inspection in Virginia, (30) 74.
 - instruction and inspection, (36) 476.
 - law in Ohio, (33) 662.
 - payment for milk at, (28) 776; (30) 476.
 - plans, (27) 575; (31) 675.
- fat content standard for, (30) 476.
- fat tester for, (33) 314.
- Finnish egg, manufacture, (28) 258.
- Fontina, manufacture, (28) 374.
- food value, (37) 669.
- fresh cream, making, (30) 275.
- from buttermilk, (40) 379.
- carabao's milk, composition, (31) 374.
- milk mixtures, fat and casein content, (33) 475.
- mixed and unmixed milks, (31) 475.
- pasteurized milk, (25) 675; (29) 674; (33) 382; (37) 576; (39) 282, 582.
- sheep and buffalo milk, analyses, (27) 575.
- gas formation in, (36) 673.
- Gervais, analyses, (26) 578.
- Gervais, making, (39) 582.
- Gloucester, manufacture and quality, (29) 676.
- Gouda, analyses, (30) 575.
- Gouda, composition and control, (34) 273.

Cheese—Continued.

- Grana—
 - manufacture, (30) 275; (33) 876; (34) 572.
 - or Parmesan, manufacture, (28) 583; (29) 777.
 - or Parmesan, pure cultures for, (27) 283.
 - warm-chamber method of making, (29) 880.
- gray, manufacture in the Tyrol, (27) 377.
- green color in, (28) 583.
- green mold, flavor of, (26) 775.
- Harz, dark coloration in, (26) 675.
- Herrgård, notes, (35) 379, 483.
- Holland, digestibility, (28) 258.
- homemade, manufacture, (29) 675.
- Hungarian, analyses, (26) 372.
- imports into Peru, (27) 469.
- imports into United Kingdom, (26) 479.
- industry—
 - in Canada, (38) 294.
 - Ireland, (26) 372.
 - Netherlands, (28) 178.
 - New Zealand, (38) 281.
 - Siberia, (37) 778.
 - United Kingdom, (28) 178.
 - United States, (30) 777, 791.
- refrigeration in, (27) 377.
- international trade in, (27) 574.
- Italian, fat content, (33) 81.
- Jack, manufacture, (27) 377; (40) 576.
- judging by score cards, (27) 74.
- Königsberg, analyses, (34) 572.
- Liptauer—
 - microflora of, (32) 473.
 - or Brinsen, analyses, (28) 278.
 - ripening, (30) 275.
- making, (26) 479; (33) 175; (34) 573; (36) 574.
- making—
 - at Lodi Experiment Station, (29) 777.
 - Bacillus bulgaricus in, (31) 772.
 - experiments, (27) 779; (30) 76; (31) 675, 875.
 - (34) 875.
 - experiments in Quebec, (36) 574.
 - ferment serum for, (29) 280.
 - guide, (28) 475.
 - high v. low testing milk for, (34) 473.
 - homogenized cream for, (40) 576, 865.
 - in northern Europe, (30) 177.
 - Norway, (35) 379.
 - Philippines, (39) 785.
 - South America, (34) 572.
 - South Australia, (29) 280.
 - southern mountain districts, (39) 486.
 - Sweden, (26) 477.
 - the home, (30) 275; (38) 580.
 - Vermont, (36) 877.
- lactic ferment cultures in, (31) 375.
- notes, (28) 371, 374; (32) 175; (35) 483; (36) 176.
- on the farm, (35) 573; (37) 778; (40) 675, 879.
- selected ferments in, (29) 777; (33) 277, 577.
- starters for, (28) 374.
- starters, propagation, (26) 299.
- treatise, (40) 283.
- use of pathological milk, (26) 676.
- use of pepsin in, (37) 175, 875; (39) 884.
- with definite fat content, (36) 176.
- manufacturing and marketing association, cooperative, (37) 594.
- marketing, (29) 675; (31) 893; (36) 378.
- marketing by parcel post, (39) 182.
- marketing cooperatively, (26) 92.
- markets and prices, (33) 383.
- marketing regulations in Italy, (27) 179.
- Marolle, analyses, (26) 778.
- mass, consistency, (27) 678, 679.
- methods of analysis, (28) 612; (29) 810; (31) 114, 811; (32) 313; (33) 208, 258; (35) 110.
- milk, pasteurization, (29) 376.
- mites, life history and economics, (38) 460.
- mites, studies, (39) 664.
- moisture content, law regulating, (34) 273.
- mold growth on, (36) 176.
- mold-ripened, salt factor in, (32) 176.
- mold, ripening of, (31) 176.
- Naifoto, manufacture and composition, (34) 574.
- Neufchâtel—
 - and cream, (39) 570, 581; (40) 79.
 - manufacture, (40) 675.
 - manufacture and analyses, (32) 175.
 - ripening, (32) 473.
- North Wilts, manufacture and quality, (29) 676.
- Norwegian "old," manufacture, (26) 371.

Cheese—Continued.

- nutritive and fuel value, (29) 564.
- of Forez and D'Ambert, (27) 75.
- of Saint-Marcellin, characteristics, (26) 82.
- of southern Italy, descriptions, (27) 475.
- overripe, nutritive value, (29) 59.
- paraffining, (26) 172; (34) 574.
- Parmesan and Lodi, comparison, (28) 278.
- Parmigiano, manufacture, (34) 474.
- phosphorus content, (27) 461.
- physical and chemical constants, (28) 372.
- poisoning, studies, (35) 556.
- Portuguese, analyses, (29) 173.
- preservatives, tests, (27) 777.
- production—
 - in California, (28) 371.
 - in Italy, (27) 472.
 - statistics, (26) 477.
- proteolysis in, (27) 501.
- Raffiné, of Island of Orleans, (26) 276.
- recipes, (29) 564.
- reindeer, analyses, (30) 275, 476.
- reindeer, making, (32) 577.
- relation to microorganisms, (26) 372.
- rind flora, effect on inner portion of the cheese, (32) 776.
- ripening, (34) 573.
- ripening—
 - as affected by fat content, (36) 673; (37) 175.
 - by electricity, (29) 675.
 - chemistry of, (32) 473, 503.
 - experiments, (27) 779; (30) 77.
 - lactic acid bacteria in, (34) 76.
 - microorganisms in, (31) 477; (37) 503.
 - notes, (29) 59.
 - studies, (27) 75; (28) 114; (29) 9; (31) 475.
- robbiola, bacterial flora, (36) 477.
- Roquefort—
 - bacterial studies, (35) 177; (39) 385.
 - biology, (32) 176.
 - cold storage, (27) 377.
 - composition of fat, (32) 77.
 - flavor of, (31) 107.
 - gases in, (30) 312.
 - like, from cows' milk, (32) 177.
 - tyrosin crystals in, (26) 313.
- Roumanian sheep, manufacture and analyses, (26) 675.
- Russian, analyses, (26) 778.
- Russian Schweitzer, composition, (28) 278.
- schools, cooperative, in England, (40) 896.
- score cards for, (26) 779.
- sheep, ripening, (30) 679.
- sheep's milk, chemical and physical constants, (33) 505.
- shrinkage in, (29) 777.
- shrinkage tests, (35) 471.
- skim milk, manufacture, (30) 878; (37) 576.
- skipper, bionomics and structure, (31) 552.
- Slipcote, manufacture, (26) 82.
- soft, cold storage, (40) 777.
- soft, making, (28) 371; (30) 575; (34) 184; (38) 78.
- soft, ripening experiments, (27) 777.
- soy bean, analyses, (28) 166.
- standards, German, (27) 879.
- statistics in United States, (28) 390; (33) 894.
- Stilton—
 - and Wensleydale, notes, (31) 676.
 - manufacture, (30) 679.
 - microflora of, (28) 879.
 - yellow discoloration, (27) 474, 475.
- streptococci, studies, (39) 385.
- Swedish—
 - Emmental, manufacture, (33) 81.
 - Emmental, studies, (35) 483.
 - Estate, manufacture, (33) 81.
 - varieties, (33) 275.
- Swiss—
 - as affected by silage feeding, (36) 876.
 - Emmental, fat content, (33) 81.
 - exports in 1910, (27) 76.
 - gases of, (26) 775.
 - imported v. domestic, (36) 876.
 - ripening, (34) 574.
- testing, (29) 876.
- textbook and bibliography, (26) 479.
- Touareg, analyses, (26) 479.
- tubercle bacilli in, (28) 278.
- uses in the diet, (27) 63.
- varieties, (27) 75; (38) 781.

Cheese—Continued.

- vegetable, notes, (26) 809.
- Wensleydale, notes, (30) 179.
- whey, paraffining, (34) 474.
- white Gorgonzola, notes, (27) 679.
- whole milk, composition, (31) 874.
- whole milk, standards, (29) 777.
- yield as affected by casein, (27) 779.
- Cheiloniomyia javensis n.sp., description, (37) 59.
- Cheiloniurus—
 - albicornis, description, (36) 259.
 - javanus n.sp., description, (28) 63.
- Cheilospirura hamulosa, occurrence in United States, (26) 890.
- Chelmatobia brumata—
 - notes, (33) 656; (36) 754; (40) 574.
 - remedies, (31) 548; (32) 850.
- Cheletiella parasitivorax on cats, (37) 584.
- Chelidonium—
 - majus, carotinoid content, (31) 803.
 - seeds, lipase of, (32) 19.
- Cheliniidea spp., notes, (28) 451.
- Chelonia caja, notes, (30) 855.
- Chelonus—
 - blackburni, notes, (31) 249.
 - blackburni, parasitic on beet webworm, (26) 250.
 - caradrinae n.sp., description, (33) 659.
 - carcepsae, notes, (39) 361.
 - phthorimaeae n.sp., description, (38) 165.
 - shoshoneanorum, notes, (36) 655.
 - texanus, biology, (28) 859.
 - texanus, parasitism, (31) 458.
- Chemical—
 - analysis, treatise, (27) 609; (29) 203, 307, 506; (30) 309; (31) 806; (34) 711; (35) 11; (37) 310, 614, 802.
 - apparatus, new, description, (26) 26.
 - calculating chart, new, (38) 204.
 - calculations, textbook, (36) 411.
 - cell functions, method for study, (26) 21.
 - constitution and physiological action, treatise, (36) 411.
 - constitution, relation to color, (40) 505.
 - directory of United States, (37) 501.
 - equilibrium as affected by motion, (28) 168.
 - French, textbook, (39) 418.
 - German, introduction to, (40) 709.
 - glassware, tests, (38) 309.
 - industries in Belgium, Netherlands, Norway, and Sweden, (30) 127.
 - industry, electrolysis in, (40) 109.
 - laboratory at Göteborg, Sweden, report, (31) 509.
 - mixing, stirring, and kneading, treatise, (27) 14.
 - pathology, treatise, (32) 78; (39) 79.
 - physical tables, book, (29) 107.
 - station at Alnarp, report, (29) 119.
 - studies on physiology and pathology, (40) 201.
 - technical methods of analysis, treatise, (27) 205.
 - technology, treatise, (27) 14; (29) 413.
- Chemicals—
 - effect on plants, (30) 343; (32) 538.
 - effect on starch grains, (29) 409.
 - inspection in Georgia, (26) 624.
 - used in household, hazards from, (38) 508.
 - Van Nostrand's annual on, (38) 810.
- Chemistry—
 - agricultural—
 - at international congress of applied chemistry, (27) 499.
 - bibliography, (33) 801.
 - contributions of H. Ritthausen, (29) 501.
 - new official journal, (33) 100.
 - notes, (27) 406; (32) 501.
 - progress in, (27) 14; (28) 616; (29) 408, 795; (30) 212, 309; (33) 801; (34) 311; (35) 311.
 - review of investigations, (33) 512.
 - review of literature, (26) 338.
 - solubility determinations in, (27) 609.
 - textbook, (30) 10, 309; (35) 501.
 - treatise, (27) 109; (32) 501.
 - analytical, treatise, (29) 506; (32) 501.
 - animal, progress in, (28) 777; (34) 311.
 - applied analytical, treatise, (40) 10.
 - applied, notes, (33) 876.
 - bibliography, (27) 14; (31) 196; (36) 600.

Chemistry—Continued.

- colloid—
 - application to agriculture, (29) 408.
 - discussion, (28) 607.
 - handbook, (34) 801; (40) 408.
 - in immunology, (36) 178.
 - in soils, geology, and mineralogy, (30) 513.
 - review of literature, (26) 307.
 - textbook, (27) 107; (28) 407.
 - treatise, (35) 8; (38) 309.
 - dairy, treatise, (32) 501.
 - dictionary, (29) 801.
 - fermentation, progress in 1911, (29) 107.
 - household, textbook, (34) 458; (40) 493.
 - household, treatise, (30) 63; (32) 558.
 - in the service of man, (39) 8.
 - industrial and manufacturing, treatise, (30) 610; (39) 607.
 - industrial, manual, (29) 107.
 - inorganic, treatise, (29) 801; (40) 801.
 - international catalogue, (27) 718; (33) 201; (34) 407; (37) 501.
 - metabolic, treatise, (35) 765.
 - of enzymes, treatise, (30) 409.
 - fats, progress in 1911, (29) 108.
 - plant and animal life, treatise, (30) 310.
 - plant products, treatise, (31) 803; (37) 801.
 - soils, progress in, (30) 212.
 - soils, treatise, (30) 512.
 - the cell, treatise, (27) 107.
 - the farm and home, textbook, (36) 692.
 - organic—
 - handbook, (32) 109.
 - industrial, treatise, (40) 408.
 - laboratory guide, (35) 8.
 - textbook, (27) 806; (31) 309.
 - treatise, (29) 801; (34) 801; (39) 607; (40) 709.
 - papers on, (29) 676.
 - papers on from Rockefeller Institute, (33) 279.
 - physical, notes, (27) 406.
 - physical, of vital phenomena, treatise, (39) 8.
 - physiological—
 - and pathological, treatise, (29) 267.
 - progress in, (34) 167; (35) 162; (40) 554.
 - review of literature, (28) 801.
 - textbooks, (26) 201; (31) 361; (34) 563, 607.
 - treatise, (35) 311; (40) 109, 308.
 - progress in, (26) 405; (27) 107, 616; (29) 501; (35) 8, 201; (37) 166, 409; (40) 109, 801.
 - relation to immunity research, (26) 83.
 - sanitary and applied, (39) 501.
 - sanitary and applied, textbook, (30) 695.
 - studies, (31) 277.
 - technical, encyclopedia, (32) 308.
 - technical, treatise, (34) 801.
 - textbook, (29) 792; (34) 599; (37) 108, 598, 801.
 - toxicological, notes, (30) 314.
 - treatise, (27) 205; (30) 63, 309, 310, 409, 512, 610, 707; (34) 407; (39) 8, 501, 607.
 - writings of J. von Liebig, (32) 109.
 - yearbook, (32) 801; (34) 494.
- Chemotherapeutic substances, action of, (35) 380, 381.
- Chemotherapy—
 - address on, (31) 177.
 - notes, (26) 677.
 - oxidotherapy, new method, (38) 585.
- Chemotropism in rootlets, (32) 128.
- Chenopodium—
 - album—
 - analyses, (33) 70, 466; (34) 39.
 - dissemination by farm animals, (26) 839.
 - feeding value, (33) 70.
 - amaranthicola, culture experiments, (30) 632.
 - anthelminticum, notes, (30) 145.
 - effect on defecation, (40) 477.
 - nuttalliae n.sp., description, (40) 728.
 - oil as a cardiac stimulant, (36) 576.
 - as a vermifuge, (38) 883.
 - as an anthelmintic, (37) 578.
 - composition, (28) 506.
 - effect on circulation and respiration, (34) 476.
 - effect on intestinal contractibility, (34) 381.
 - studies, (39) 585.
 - quinoa, studies, (39) 610.
- Cherimoya—
 - asexual propagation, (32) 143.
 - composition, (35) 663.
 - notes, (27) 242.

Cherimoya—Continued.

- propagation, (27) 537.
 - propagation by inarching, (31) 441.
- Chermes—
 - abiesis, notes, (28) 353.
 - attacking fir trees, (38) 158.
 - cooley, life history, (36) 456.
 - cooley, notes, (26) 146; (33) 857; (37) 255.
 - injurious to conifers, (35) 56.
 - obliteration of sexual reproduction in, (31) 59.
 - of spruce and larch, (40) 262.
 - pineae, notes, (26) 147; (35) 256.
 - pinicorticis, notes, (28) 353; (30) 657.
 - spp., biology, (34) 854.
 - spp., notes, (26) 856; (27) 755.
 - studies, (34) 551.
- Chermesidae—
 - injurious to British forests, (38) 561.
 - of Switzerland, (30) 854.
- Chermesinae, virginoparus forms, (33) 748.
- Cherries—
 - acidity, (32) 110; (37) 714.
 - blooming period and fertility, (37) 745.
 - breeding experiments, (36) 741; (37) 833.
 - composition as affected by irrigation, (29) 236.
 - cost of production, (29) 439.
 - cover crops for, (34) 231.
 - cross-pollination experiments, (38) 345.
 - crown gall affecting, (28) 447.
 - culture, (27) 843; (32) 45; (33) 440; (36) 444; (39) 447.
 - culture—
 - experiments, (27) 343; (28) 436; (36) 443.
 - in Alaska, (29) 748.
 - Mesa County, Colorado, (37) 241.
 - New Mexico, (40) 18.
 - New York, (35) 836.
 - Ontario, (33) 440.
 - southern Texas, (32) 539.
 - Utah, (30) 442; (33) 638.
 - on a commercial scale, (27) 241.
 - treatise, (36) 641.
 - dried, microbiology, (34) 460.
 - dried, preparation and use, (29) 462.
 - drying, (37) 509, 715.
 - dusting experiments, (38) 546.
 - fall v. spring planting, (26) 238; (35) 837; (37) 743.
 - fertile and self-sterile varieties, (40) 638.
 - frost injury, (37) 344; (38) 646.
 - geographic distribution, (28) 742.
 - growth as affected by meteorology, (29) 510.
 - growing on grass land, (26) 639.
 - handling and shipping, (34) 534.
 - hardy Russian variety, (39) 846.
 - host of Archips argyrospila, (27) 160.
 - injury by wet soil, (38) 646.
 - inoculation experiments with brown rot fungus, (33) 247.
 - insects affecting, (26) 553; (30) 753; (33) 440; (38) 460, 843; (39) 257, 259.
 - localization of acids and sugars in, (36) 110.
 - maraschino, labeling, (26) 762.
 - marketing by parcel post, (39) 543.
 - Monilia affecting, (26) 849.
 - new, descriptions, (29) 838; (31) 337; (33) 238; (35) 37.
 - of Germany, (33) 838.
 - of Japan, (35) 343, 645, 743.
 - of New York, (33) 439.
 - oriental peach moth injury, (40) 756.
 - pear slug affecting, (26) 863.
 - pear thrips affecting, (27) 156; (40) 547.
 - picking and handling, (34) 437.
 - pollination, (30) 443; (34) 233, 341; (36) 139; (40) 148, 638.
 - preservation by freezing, (39) 344.
 - pruning, (30) 739; (32) 837; (40) 742.
 - pruning and training, (37) 344.
 - respiration in gases, (29) 135, 538.
 - ringing experiments, (32) 636.
 - Sclerotinia affecting, (28) 649.
 - seedling, variation in, (30) 144.
 - self-sterility in, (40) 148.
 - sod mulch v. clean culture, (33) 43.
 - spray schedules, (39) 39, 140.
 - spraying, (37) 744.
 - spraying, dust v. liquid, (37) 832.
 - spraying experiments, (27) 143, 439; (28) 436; (30) 641.
 - standard package for, (34) 438.

Cherries—Continued.

- stock for, (40) 445.
- sunburn of, (29) 547.
- treatise, (32) 338.
- tree census in Washington, (40) 340.
- varieties, (32) 538; (33) 637; (36) 237; (37) 241.
- varieties—
 - for home orchard, (40) 341.
 - Indiana, (39) 447.
 - New Jersey, (33) 439.
 - Ohio, (37) 241.
 - Pacific Northwest, (29) 745.
 - western Washington, (33) 44
 - in Oklahoma, (27) 241.
 - resistant to disease, (29) 246.
 - variety for Oregon, (39) 241.
 - winter injury, (32) 43; (40) 835.
 - winter injury of buds, (39) 541.
- Cherry—
 - aphis—
 - alternate hosts, (39) 464.
 - notes, (32) 651; (40) 648.
 - predatory enemy of, (30) 459.
 - secondary host, (38) 58.
 - studies, (39) 158, 360.
 - bacterial—
 - canker, notes, (34) 351.
 - disease, notes, (28) 746.
 - disease, studies, (38) 551.
 - black knot—
 - description and treatment, (38) 853.
 - notes, (37) 555.
 - studies, (32) 52.
 - blight, notes, (34) 648.
 - blister disease, notes, (34) 543.
 - brown bark spot on, (39) 251.
 - brown rot—
 - notes, (28) 544; (34) 241; (35) 351.
 - or gummosis, treatment, (38) 454.
 - spraying, (39) 652.
 - studies, (31) 749.
 - treatment, (28) 244; (40) 154.
 - by-products, utilization, (34) 808.
 - Coccomyces disease, wild hosts, (39) 456.
 - Coryneum rust, notes, (33) 549.
 - Cytospora disease, notes, (30) 352.
 - disease in Rhine Provinces, (26) 144.
 - diseases—
 - and insects, studies, (33) 440.
 - in Netherlands, (35) 351.
 - notes, (26) 844; (27) 45, 349; (28) 747; (33) 741; (38) 50.
 - studies, (28) 241.
 - treatment, (33) 349.
 - ermine moth, notes, (29) 252.
 - ermine moth, studies, (28) 557.
 - flowers, polymorphism in, (28) 540.
 - fruit fly—
 - black bodied, *see* *Rhagoletis fausta*.
 - notes, (26) 146; (27) 53; (35) 356.
 - studies, (29) 55; (33) 561.
 - fruit maggots, remedies, (31) 757.
 - fruit rot, notes, (35) 454.
 - fruit sawfly—
 - life history and remedies, (28) 657.
 - notes, (30) 857.
 - gummosis, bacterial, (26) 144; (32) 644; (33) 299; (39) 151.
 - gummosis, studies, (27) 852; (28) 549; (29) 154; (30) 749; (32) 344.
 - Japanese, description, (31) 236.
 - juice, preparation, (33) 316.
 - kernels, hydrocyanic acid content, (28) 477.
 - lace-bug, new, (39) 763.
 - laurel, hydrocyanic acid in, (29) 133.
 - laurel leaves, hydrocyanic acid content, (28) 477.
 - leaf beetle—
 - food plant, (40) 170.
 - life history, (34) 756.
 - notes, (36) 856.
 - studies, (35) 260; (37) 459; (40) 63.
 - leaf blight—
 - control, (39) 552.
 - notes, (40) 249, 251.
 - leaf diseases, treatment, (34) 747.
 - leaf spot—
 - new, in United States, (36) 452.
 - or shot hole disease, notes, (32) 49; (38) 546.
 - studies, (36) 149; (37) 755; (38) 251; (39) 55, 855.
 - treatment, (36) 845.

Cherry—Continued.

- leaves, free hydrocyanic acid in, (27) 635.
 - little leaf, studies, (32) 238.
 - mildew, notes, (40) 53.
 - moth, notes, (35) 56.
 - orchard soils, chemical and biological notes, (33) 640.
 - pits, oils of, (39) 8.
 - powdery mildew, investigations, (33) 347.
 - rot, treatment, (38) 541.
 - sawfly leaf-miner—
 - notes, (28) 158; (29) 252.
 - studies, (34) 456, 657.
 - shothole, notes, (35) 454.
 - slug, *see* *Eriocampoides limacina*.
 - soft scald, studies, (39) 855.
 - stocks, effect on scion, (28) 541.
 - stones, hydrocyanic acid content, (27) 11.
 - "stop-back," relation to tarnished plant bug, (40) 455.
 - tent-maker or tortrix, notes, (26) 856.
 - tree trunks, introduction of solutions into, (36) 740.
 - tree ugly nest tortricid, natural control, (40) 62.
 - twigs, composition, (26) 407.
 - weevil, oviposition, (39) 363.
 - wild, poisoning stock, (39) 386.
 - wine, preparation, (27) 412.
 - witches' brooms, studies, (37) 250.
 - worm, ugly nest, notes, (34) 752; (36) 856.
 - yellow leaf—
 - description and treatment, (30) 848.
 - studies, (33) 347.
- Chess seed, analyses, (29) 367.
- Chestnut—
 - bark disease—
 - control, (26) 146; (27) 252, 354.
 - control in Massachusetts, (28) 643; (30) 743.
 - dissemination by insects, (35) 756.
 - history and distribution in Massachusetts, (26) 551.
 - in British Columbia, (31) 845.
 - Massachusetts, (36) 454.
 - southern Indiana, (35) 551.
 - Vermont, (34) 848.
 - notes, (27) 252, 444, 653, 654; (28) 345; (30) 746; (33) 448; (40) 53, 159, 349.
 - on freshly fallen nuts, (34) 546.
 - reversion caused by, (30) 751.
 - studies, (26) 345; (27) 548, 852; (29) 156, 451, 552, 553, 651, 753; (30) 349, 543, 653; (31) 751; (33) 551.
 - threatening Pacific States, (34) 354.
 - treatment, (27) 853.
 - bast miner, description, (32) 450.
 - black canker—
 - in nurseries, (35) 655.
 - in Italy, (32) 54.
 - notes, (26) 551; (30) 52, 247.
 - or ink disease, studies, (33) 854.
 - studies, (29) 156, 851; (35) 250; (36) 752; (37) 657, 658; (39) 554; (40) 160.
 - black rot, studies, (40) 851.
 - blight—
 - ascospore expulsion in, (32) 346.
 - control by injection of chemicals, (34) 546.
 - control in Massachusetts, (36) 843.
 - control in Pennsylvania, (28) 153; (29) 753; (35) 51.
 - control in West Virginia, (35) 154, 657.
 - description, (31) 153, 449.
 - dissemination, (29) 351, 753, 754; (33) 56.
 - dissemination and growth, (33) 854.
 - dissemination by birds, (31) 57; (32) 55.
 - dissemination by insects, (34) 448, 853.
 - fungus as affected by tannin, (36) 149.
 - fungus, effect of dyes on, (39) 153.
 - fungus, identity, (27) 450.
 - fungus, longevity of pycnosporos, (31) 153.
 - fungus, morphology and life history, (31) 246.
 - fungus, notes, (34) 49.
 - fungus, relationships, (28) 651.
 - in China, (29) 753.
 - Massachusetts, (39) 750.
 - Pennsylvania, (36) 454.
 - United States, (27) 450.
 - West Virginia, (37) 558.
 - life history and morphology, (34) 157.
 - notes, (28) 246, 750; (30) 151; (31) 546; (36) 150.

Chestnut—Continued.

- blight—continued.
 - parasite and other chestnut fungi in Japan, (34) 848.
 - poisoning, notes, (31) 657.
 - reforestation after, (38) 45.
 - resistance, studies, (30) 544.
 - resistant species, (36) 645; (37) 756.
 - studies, (28) 551; (32) 54, 446; (34) 154, 545; (35) 154; (37) 557; (38) 52.
 - treatment, (28) 184; (29) 754.
- blighted timber, cutting out, (36) 52.

borer—

- notes, (30) 154.
- remedies, (36) 856.
- two-lined, notes, (27) 755, 756; (28) 158, 653.
- two-lined, remedies, (35) 760.
- two-lined, studies, (32) 656.

bur borer, notes, (40) 854.

canker, studies, (36) 548.

destructive distillation, (27) 745.

disease—

- description, (31) 451.
- new, description, (33) 448.
- notes, (26) 651.

diseases—

- in France, (33) 56.
- notes, (27) 753.
- studies, (28) 240.

Endothia canker, histology, (31) 845.

flakes, preparation and use, (36) 367.

flour, analyses, (39) 870.

flour, soluble carbohydrate of, (26) 464.

fruits, infection with chestnut blight fungus, (33) 551.

hybrids, blight resistance in, (31) 142.

ink disease, paper on, (27) 438.

lands, reforestation, (31) 341.

leaf—

- bacteriosis, (37) 550.
- injury in Paris, (37) 224.
- spot, large, notes, (28) 55.
- leaves, mottling, (30) 147.
- leaves, plant food constituents, (37) 629.
- Oidium, notes, (38) 455.
- pocketed or piped rot, description, (30) 52.
- seeds, reserve material in, (34) 427.
- starch, studies, (31) 828.
- survey in Tennessee, (26) 745.
- timber killed by bark disease, utilization, (31) 144.
- tree disease in Ardèche, (36) 149.
- trees as affected by injection of chemicals, (33) 350.
- weeds, diseased, treatment, (29) 755.
- weevils—see also *Balaninus* spp.
- notes, (26) 753.

Chestnuts—

- breeding, (31) 142.
- composition, (39) 107.
- culture experiments, (28) 236.
- Diaporthe parasitica affecting, (26) 56.
- dying, (31) 246.
- ood value, (40) 173.
- grafting upon oaks, (26) 551.
- horse, see Horse-chestnuts.
- in horses, (26) 672; (28) 772.
- insects affecting, (27) 756; (30) 456.
- Japanese, resistance to black canker, (27) 51.
- Japanese, resistance to black root rot, (29) 553.
- keeping over winter, (35) 840.
- new, description, (31) 337.
- varieties for blight districts, (38) 152.

Cheyletus—

- ruditus, notes, (40) 855.
- semivivorus, life history and habits, (28) 859.
- Chhana, analyses, (27) 268.

Chicago—

- Board of Trade, rules and by-laws, (33) 787.
- stockyards district, wages and family budgets in, (32) 163.

Chick—

- embryo—
 - as affected by temperature, (39) 482; (40) 671.
 - behavior of transplanted tissue in, (27) 368.
 - development, (26) 271.
 - electro-cardiogram of, (31) 173.

Chick—Continued.

- embryo—continued.
 - interchange of limbs by transplantation, (26) 877.

embryology, (29) 371.

embryonic nutrition, (30) 170.

embryonic tissues, growth in artificial media, (26) 164.

peas—see also *Cicer arietinum*.

- analyses, (30) 558; (31) 258; (40) 557.
- anatomical structure, (28) 660.
- culture experiments, (28) 735; (29) 538; (39) 735.
- culture in India, (36) 635.
- culture in Washington, (40) 730.
- for pigs, (28) 364; (33) 171.
- oil content, (27) 716.
- production in Spain, (28) 736.
- seeds, proteins of, (28) 460.
- use in bread making, (40) 66.
- varieties, (28) 533.
- water requirement, (32) 127.

Chicken—

- blood, dried, analyses, (36) 268.
- bug, Mexican, notes, (29) 454.
- cholera, prevalence in Prussia, (27) 181.
- disease, notes, (31) 879.
- diseases and intestinal parasites, (37) 779.
- fat, constants of, (27) 111.
- fat, digestibility, (36) 860.
- fat, studies, (26) 761; (28) 63; (31) 758.
- flea, see Hen flea.
- flesh as affected by temperatures above and below freezing, (37) 62.
- guinea hybrid serum, refractive index, (35) 279.
- lice and mites, description, (32) 754.
- lice and mites, notes, (35) 183.
- lice, remedies, (32) 754; (37) 258.
- meat, poisoning by cantharides, (26) 660.
- mites—see also Poultry mites.
- destruction, (34) 682.
- dissemination by English sparrows, (26) 246.
- life history and habits, (37) 859.
- notes, (33) 354; (35) 183, 878; (37) 361.

pox, complement fixation in, (34) 877.

- immunization, (30) 785; (31) 887; (34) 274, 784; (35) 885; (37) 884.
- notes, (36) 498.
- paper on, (38) 179.
- pathology, (26) 889; (27) 576.
- secondary invader, (34) 481.
- studies, (35) 283.
- transmission by *Stomoxys calcitrans*, (28) 756.
- treatment, (39) 791.
- vaccination, (39) 792.

sarcoma, serum treatment, (40) 678.

sarcoma, spindle-celled, (28) 287, 288.

soup, condensed, examination, (29) 659; (31) 659.

testes, histological studies, (27) 869.

testes, interstitial cells in, (34) 264.

tick, see *Argas miniatus*.

Chickens—see also Chicks, Fowls, Hens, and Poultry.

- American class, (37) 368.
- anthelmintics for, (40) 778.
- as affected by—
 - Röntgen rays, (31) 369.
 - vitamin-free diet, (30) 865.
- bare necked, of Barbados, (32) 367.
- bovine variola in, (27) 685.
- breeding and management, (33) 77.
- breeding experiments, (32) 572; (35) 869.
- castore infection in, (35) 577, 683.
- cost of raising, (33) 77; (39) 481.
- crest of, (30) 773.
- digestion of aluminum by, (30) 873.
- dissemination of—
 - anthrax by, (28) 678.
 - forage poisoning by, (38) 383.
- early hatching, (38) 678.
- factors affecting pulse rate, (28) 768.
- Garonnaise, notes, (31) 568.
- grit for, (34) 377.
- growing, cholesterol content, (30) 674.
- growth as affected by electricity, (30) 674, 873.
- growth in confinement, (40) 876.
- hatching and rearing, (29) 574.

Chickens—Continued.

- hatching on a large scale, (26) 772.
- immunity against anthrax bacillus, (29) 378.
- immunization against tuberculosis, (26) 85.
- in Philippines, (26) 666; (30) 374.
- limber-neck in, (36) 681.
- malta fever affecting, (26) 84.
- Mediterranean and Continental classes, (38) 373.
- milk-fed, (35) 499.
- milk-fed, in Europe, (32) 264.
- natural and artificial brooding, (32) 264.
- nematodes in crop, (40) 587.
- nutrition studies with, (39) 369.
- odd chromosome in spermatogenesis of, (30) 772.
- of Guam, (30) 69.
- of Philippines, improvement, (38) 576.
- origin and history of breeds, (27) 572.
- poisoning with rose chafer, (34) 655; (35) 489; (36) 281.
- relation to typhoid fever, (32) 477.
- trussing and boning, (26) 168.
- tuberculin test for, (27) 181; (31) 582.

Chicks—

- artificial brooding, (35) 773; (37) 71.
- as affected by—
 - alcoholization, (40) 470.
 - pituitary substances, (36) 468.
 - rice diet, (38) 677.
- brooders for, (40) 372, 485.
- brooding, (33) 97; (36) 871; (39) 781.
- care and management, (37) 96; (39) 75, 781.
- care of, (32) 869.
- cost of raising, (32) 868; (35) 377; (36) 72; (37) 681; (39) 577.
- day-old, sex of, (33) 672.
- day-old, shipping long distances, (38) 677.
- developing, lipid metabolism in, (28) 876.
- digestion in, (29) 372.
- diseases of, (37) 280.
- effect of mineral matter on, (39) 377.
- feeding, (28) 73; (33) 98; (35) 773.
- feeding—
 - and care, (33) 381.
 - and management, (39) 75.
 - experiments, (28) 172, 773; (29) 273; (30) 571; (31) 473, 569; (32) 570; (33) 273; (34) 176, 871, 872; (35) 479; (37) 768; (39) 376, 577, 780.
 - experiments, résumé, (33) 572.
 - pineal gland secretion, (39) 780.
- growth as affected by pituitary and thymus substances, (35) 171.
- growth under laboratory conditions, (35) 472; (36) 373.
- hatching artificially, (31) 670.
- hatching, early v. late, (36) 870.
- incubating and care, (26) 270.
- incubation and brooding experiments, (33) 76.
- instincts and habits in, (26) 670.
- lysine requirements, (39) 480.
- mineral requirements, (39) 577.
- mortality in, (34) 881.
- outline for laboratory study, (40) 483.
- primordial germ cells in, (30) 872.
- proteins for, (39) 480.
- raising, (31) 271; (40) 670.
- raising on new land, (36) 173.
- Rhode Island Red, rate of growth, (40) 670.
- scale and feather development of, (31) 369.
- shipping boxes, (40) 78.
- teaching to roost, (35) 377.
- troubles and vices, (39) 791.
- White Leghorn, rate of growth, (40) 670.
- Chickweed, destruction, (26) 333; (31) 739.
- Chicle from Euphorbia lorifolia, (28) 49.
- Chico mamey, analyses and use, (30) 363.

Chicory—

- adulteration, (39) 715; (40) 658.
- betains in, (27) 203.
- catalytic fertilizers for, (27) 629.
- culture, (28) 839.
- detection in roasted coffee, (31) 208.
- fertility experiments, (26) 631.
- fertility in, (38) 226; (39) 432; (40) 427.
- flower number per head, (40) 225.
- insects affecting, (31) 249.
- inulin coagulating substances in, (36) 127.
- inulin in, (39) 202, 524.
- inulin metabolism in, (28) 821; (30) 432.

Chicory—Continued.

- irrigation experiments, (30) 886.
- monograph, (31) 336.
- notes, (29) 338.
- physiological effect, (27) 868.
- pollination studies, (36) 523.
- preparation and methods of analysis, (29) 660.
- products, description and analyses, (35) 504.
- root, betains in, (27) 203.
- root, inulin in, (40) 325, 727.
- roots, dried, for horses, (33) 670.
- Sclerotinia disease of, (29) 646.
- studies, (28) 762; (34) 427.
- substitute for, (40) 508.
- varieties, (26) 631; (30) 435.
- watering, continuous, (37) 543.
- Witloof, culture and forcing, (35) 742.
- Witloof, forcing, (36) 443.
- Chigger mites, studies, (39) 265.
- Chiggers—see also Trombidium spp.
 - notes, (35) 552.
 - remedies, (33) 258.
- Child—
 - labor in—
 - agriculture, (40) 591.
 - cotton picking, (30) 793.
 - sugar-beet fields of Colorado, (38) 191.
 - nurture education in United States, (35) 394.
- Children—see also Boys and Girls.
 - anemic and tuberculous, nutrition, (32) 358.
 - as affected by coffee drinking, (27) 272.
 - as affected by meat ingestion, (29) 365.
 - care, (29) 465; (30) 260; (31) 660; (32) 66, 495; (34) 861; (35) 664; (40) 560.
 - choice of bread for, (26) 260.
 - creatin and creatinin of blood, (40) 274.
 - creatin excretion in, (31) 860.
 - diet of, (26) 465; (34) 861.
 - energy requirements, (39) 876.
 - feeding, (29) 465; (30) 462; (31) 660; (32) 66, 495; (35) 664; (37) 166, 671; (39) 66, 282, 472, 772, 876; (40) 68, 361, 560.
 - feeding, treatise, (26) 763.
 - food requirements, see also Infants, feeding.
 - food requirements, (29) 464; (31) 261, 463; (33) 364; (34) 861; (35) 664.
 - growth, (28) 664.
 - growth and nutrition standards, (40) 865.
 - hospital, energy metabolism of, (33) 756.
 - increased cost of maintenance, (30) 166.
 - infection with bovine tubercle bacilli, (29) 332.
 - (32) 477.
 - light farm work for, (36) 496.
 - malnutrition, (40) 362.
 - measurement of surface area, (35) 369.
 - menus for, (31) 760.
 - milk for, food value, (39) 282; (40) 179.
 - milk for, raw v. boiled, (29) 360.
 - milk for, statistics, (40) 863.
 - nervous management, (26) 465.
 - nursing, tuberculosis in, (29) 382.
 - nutrition of, (34) 561.
 - rectal temperature in, (31) 563.
 - rural, survey in North Carolina, (40) 892.
 - school, feeding, (27) 767; (28) 664.
 - school, nutrition of, (26) 262.
 - sleeping, chemistry and energy metabolism of, (26) 466.
 - sugar in diet of, (29) 460; (34) 164.
 - undernourished, in factories and schools, (39) 772.
 - undernourished, nutrition class for, (40) 661.
 - undeveloped, nutrients for, (32) 458.
- Children's gardens, see School gardens.
- Chili sauce, recipes, (28) 715.
- Chilies, see Pepper.
- Chilo—
 - infuscatellus, notes, (34) 758.
 - simplex, notes, (31) 851.
 - simplex, studies, (40) 167.
 - spp., notes, (35) 58.
- Chilocorus—
 - bipustulatus—
 - as enemy of scales, (39) 767.
 - introduction into California, (34) 361.
 - notes, (33) 467.
 - bivulnus, notes, (28) 754.
 - similis, see Asiatic ladybird.
 - spp., parasitic on white wax coccid, (35) 1.
- Chilopoda of Kansas, (30) 759.

Chilosia sp., notes, (34) 353.
 Chimonanthus spp., hydrocyanic acid in, (28) 429.
 Chin fly, *see* *Gastrophilus nasalis*.
 China berries, effect on pigs, (27) 533.
 Chinch bug—
 burning, (31) 156.
 control, (28) 354.
 control in Illinois, (29) 53.
 disease, notes, (27) 299.
 egg parasites of, (29) 854; (31) 354; (34) 66; (38) 653.
 false—
 notes, (29) 252; (37) 847.
 remedies, (36) 154; (39) 760.
 studies, (39) 464.
 fungus diseases, studies, (26) 454.
 fungus, notes, (26) 455.
 in Ohio, (39) 863.
 in Ontario, (30) 52.
 insect enemies, (40) 165.
 life history, (26) 454; (38) 54.
 notes, (28) 653; (29) 252, 793, 854; (31) 156; (32) 448; (33) 58, 59.
 nymphal stages, (40) 353.
 poisoning, (39) 258.
 remedies, (26) 454, 455; (27) 158; (29) 653; (38) 54.
 studies, (26) 347; (30) 547; (36) 153.
 Chinese—
 bean, culture, (32) 226.
 wood oil—
 in varnish, estimating, (39) 613.
 notes, (30) 616.
 tree, culture in United States, (30) 535.
 tree, notes, (28) 843; (32) 539.
 Chinin, new variety of avocado, (40) 151.
 Chinosol as treatment for—
 Fusarium in cereals, (33) 546.
 seed grain, (28) 846.
 Chinquapin pocketed or piped rot, description, (30) 52.
 Chinquapins—
 blight resistance in, (30) 544; (31) 142.
 giant, planting in Southern States, (26) 651.
 parthenogenesis in, (31) 443.
 Chion cinctus on pecan, (38) 157.
 Chionaspis—
 americana, notes, (26) 147.
 aspidistrae gossypii, injurious to cotton, (27) 454.
 biclavus, destruction by fungi, (28) 556.
 citri, notes, (31) 58.
 euonymi, *see* *Euonymus* scale.
 furfura, *see* *Scurfy* scale.
 lintneri, notes, (29) 251.
 pinifoliae, notes, (28) 353; (34) 752.
 salicis, notes, (30) 53.
 tegalensis, notes, (33) 155.
 Chipmunks—
 host of spotted fever tick, (26) 64.
 new subspecies, (39) 654.
 susceptibility to plague, (26) 59.
 Chiricahuia cavicola n.g. and n.sp., description, (40) 357.
 Chirodiscoideae caviae n.g. and n.sp., description, (38) 865.
 Chironomidae of Illinois, (34) 654.
 Chironomus—
 anonymus, notes, (28) 254.
 cavazzai, biology, (32) 450.
 sp., notes, (28) 158.
 (Tendipes) plumosus, notes, (32) 554.
 Chironetes albomanicatus, studies, (39) 656.
 Chisel, pneumatic, use in tree surgery, (30) 642.
 Chitin, occurrence in bacteria, (36) 501.
 Chlamydiae, catalogue, (30) 458.
 Chlamydobacteriales, subgroups and genera, (40) 521.
 Chlamydomonas—
 as affected by luminous radiations, (26) 431.
 movement of zoospores, (27) 729.
 reticulata, assimilation of nitrogen and phosphorus by, (28) 35.
 Chlamydozoa—
 intermediate hosts of, (26) 759.
 notes, (27) 780.
 Chlamydozoon—
 bombycis, notes, (26) 757.

Chlamydozoon—Continued.
 prowazeki n.sp., description, (26) 757.
 sphingidarum n.sp., description, (26) 758.
 Chloral hydrate—
 and copper sulphate, antagonistic action on peas, (30) 728; (32) 35.
 effect on permeability of plant tissues, (28) 732.
 toxicity toward plants, (34) 526.
 use in fistula, (26) 277.
 use in veterinary medicine, (32) 278.
 vapor, larvicidal value, (34) 359.
 Chloralose, anesthetic value, (39) 885.
 Chloramin—
 compounds, antiseptic action, (35) 380.
 compounds for sterilizing water, (38) 188.
 preparation, properties, and use, (35) 380.
 Chloramin-T—*see also* Dakin's solution, Dichloramin-T, and Hypochlorite.
 action on proteins, (36) 878.
 antiseptic value, (40) 182, 284.
 in treatment of wounds, (37) 876.
 preparation, (40) 13.
 solution, studies, (39) 185, 786.
 toxicity, (39) 586.
 Chlor-antiseptics, formulas, (37) 477.
 Chlorates—
 alkaline, pharmacodynamics, (40) 581.
 determination, (34) 712; (39) 207.
 determination in hypochlorite solution, (40) 410.
 determination in presence of chlorids and perchlorates, (26) 511.
 Chlorazene, composition and use, (38) 782.
 Chlorid—
 excretion during fasting, (30) 764.
 iodin, antiseptic value, (40) 779.
 of lime—
 decomposition in water, sewage, and organic solutions, (38) 592.
 for moor soils, (39) 438.
 in sanitation, treatise and bibliography, (29) 512.
 purification of water by, (28) 214; (29) 315; (33) 883; (34) 83.
 relation to tobacco gummosis, (28) 243.
 sterilization of milking machines by, (29) 578.
 sterilization of soil by, (26) 322.
 Chloridea—
 assulta, studies, (40) 62.
 obsoleta, *see* Cotton bollworm, Corn earworm, and Corn worm.
 virescens, studies, (37) 664.
 Chlorids—
 absorption and utilization by plants, (35) 435.
 as an indicator of water contamination, (30) 714.
 determination in—
 blood, (37) 804; (39) 207, 807.
 body fluids, (34) 507.
 cheese, (34) 807.
 cultivated soils, (30) 205.
 presence of chlorates and perchlorates, (26) 511.
 effect on—
 activity of malt diastase, (29) 528.
 nitrification in soils, (26) 817.
 nodule production, (32) 727; (33) 134.
 potato scab, (32) 750.
 soils and plants, (35) 423.
 excretion as affected by water drinking, (34) 763.
 flocculating power on clay, (27) 620.
 titration, McLean-Van Slyke method, (38) 204.
 Chlorin—
 absorption by soils, (40) 619.
 antiseptics, (40) 181, 284.
 antiseptics, action on blood clot, (40) 883.
 compounds, purification of water by, (32) 87.
 content of—
 milk, (27) 715.
 muscles, (26) 566.
 rain, (30) 418, 620, 815.
 snow, (30) 815.
 determination in—
 body fluids, (38) 204.
 chlorids, (37) 714.
 drinking water, (37) 714.
 foods, (29) 809.
 milk, (28) 314; (38) 112.
 organic substances, (39) 507.

Chlorin—Continued.

- determination in—continued.
 - potable waters, (26) 110.
 - rice, (29) 231; (31) 110.
 - vegetable matter, (34) 410.
 - water, (33) 90.
- disinfecting value as affected by alum, (34) 885.
- effect on coagulation of milk, (28) 504.
- fertilizing value, (27) 128.
- in cereals and dry legumes, (36) 761.
- inland ground waters, (31) 813.
- rain and snow, (32) 616; (38) 416.
- soils and atmospheric precipitation, (30) 422.
- ions, combination in alkali salts, (33) 623.
- ions, determination in blood, (30) 201.
- ions, determination in honey, (33) 502.
- larvicidal value, (37) 665.
- liquid, sterilization of water by, (37) 588.
- loss on incinerating organic substances, (33) 611.
- number, a new constant of fat, (32) 808.
- relation to plant growth, (38) 729, 730.
- renal excretion of, (28) 765.
- role in plant nutrition, (33) 725.
- role in protein metabolism, (28) 66.
- sterilization of water by, (33) 883; (34) 885.
- supply of body, effect of decrease, (26) 465.

Chlorinated—

- alum solution, antiseptic value, (40) 779.
- antiseptics, (39) 184, 506.
- antiseptics, action on necrotic tissue, (38) 685.
- toluene mixtures, methods of analysis, (39) 807.

Chloris—

- ciliata, germination studies, (27) 219; (31) 222.
- elegans, nutritive value, (27) 569.
- gayana—
 - analyses, (30) 565.
 - culture experiments, (27) 234.
 - culture in Philippines, (30) 233.
 - leaf structure, (36) 331.
 - notes, (27) 528.
 - root system, (36) 438.
- spp., analyses, (28) 463; (36) 334.
- spp., notes, (26) 361.
- spp., studies, (38) 66.
- virgata—
 - analyses, (33) 169.
 - analyses and digestibility, (27) 871; (32) 167.
 - notes, (31) 228.

Chlorochroa uhleri, notes, (34) 752.

Chlorocodon whitei, notes, (27) 33.

Chloroform—

- as an anthelmintic, (37) 578.
- milk preservative, (32) 472, 576.
- serum preservative, (33) 280.
- stimulant in soil extracts, (36) 815.
- vermifuge, (38) 884.
- detection in ethyl alcohol, (29) 312.
- effect on—
 - action of maltase, (28) 504.
 - assimilation of chlorophyll, (33) 827.
 - blood treated with vaselin, (31) 620.
 - chernozem soil, (38) 17.
 - development of eggs, (26) 772.
 - factors of coagulation, (35) 380.
 - germination of wheat, (27) 220.
 - grape must fermentation, (36) 801.
 - hemolytic reaction, (36) 878.
 - inversion of saccharose, (33) 523.
 - micro-flora and fauna in soils, (30) 219.
 - must and wine, (30) 612.
 - permeability of plant tissues, (28) 732.
 - plasma membranes, (26) 824.
 - plant respiration and assimilation, (26) 227.
 - plants, (28) 429.
 - respiratory exchange of leaves, (30) 227.
 - seed germination, (26) 131.
 - soil microorganisms, (31) 27.

extract of—

- hays and fodders, (31) 71.
- hays and fodders, composition and digestibility, (28) 69.
- plants, composition and digestibility, (27) 500.
- soils, (29) 801.
- sterilization of soils by, (31) 621; (32) 816.
- use against lungworms, (35) 182.
- Chlorophora excelsa, insects affecting, (28) 555.
- Chlorophyceae, development and nutritional physiology, (40) 130.

Chlorophyll—

- and blood pigment, relation, (32) 711.
 - as affected by light, (31) 222.
 - assimilation as affected by chloroform, (33) 827.
 - assimilation, notes, (30) 225.
 - chemistry, (27) 107, 310.
 - chemistry, progress in, (27) 802.
 - colloidal nature, (28) 407; (32) 19.
 - constitution of, (26) 229.
 - content and respiration of plants, relationship, (31) 222.
 - formaldehyde from, (31) 222.
 - formation as affected by—
 - magnesium, (36) 225; (39) 827.
 - manganese, (29) 323.
 - ultraviolet rays, (33) 28.
 - formation—
 - effect on toxicity of magnesium nitrate, (38) 224.
 - in plants, (31) 519, 520.
 - relation to light wave length, (33) 29.
 - relation to mitochondria, (29) 827.
 - under action of light, (28) 731.
 - function of, (34) 30.
 - grains, dimorphism in plants, (27) 427.
 - in autumn leaves, retention, (36) 225.
 - leaves, determination, (27) 713.
 - peach leaves, (32) 823.
 - plants, rôle, (34) 525.
 - plants, state of, (29) 323.
 - plants, studies, (27) 227.
 - inheritance in maize, (39) 825.
 - living, stability of, (31) 127.
 - notes, (31) 728.
 - photochemical reactions, (37) 26.
 - physiological theory, (33) 824.
 - pigments, replacing, (31) 128.
 - quotients in leaves, (30) 629.
 - relation to—
 - formation of formaldehyde, (29) 132.
 - lycopin, (32) 824.
 - transpiration in leaves, (28) 529.
 - ultraviolet rays, (27) 827; (28) 37.
 - review of Willstätter's researches on, (31) 427.
 - rôle in condensation of nitrogenous substances, (28) 328.
 - spectro-colorimetric estimation in plants, (31) 520.
 - studies, (25) 332, 435, 611; (28) 110, 608.
 - synthesis, rays concerned in, (30) 225.
 - treatise, (30) 311.
- Chloropsisca—
- glabra, studies, (39) 562.
 - notata, hibernation, (34) 254.
- Chloroplasts—
- iron compounds in, (33) 627.
 - photosynthetic function of, (31) 427.
 - primordia of, (39) 332.
 - rôle of yellow pigment in, (31) 128.
 - studies, (33) 824.
- Chlorops taeniopus, notes, (27) 560; (31) 50.
- Chlorosis—
- in corn, (31) 221.
 - in orchards, relation to soils, (28) 623.
 - in plants—
 - in nutrient solutions, (36) 633.
 - notes, (34) 525; (36) 432, 847.
 - relation to calcium carbonate, (28) 242.
 - studies, (29) 826; (33) 519, 520, 522; (34) 52; (38) 728.
- Chlorosplenium aeruginosum, notes, (32) 341.
- Chlorostatholites, notes, (36) 730.
- Chlorotettix—
- n.spp., descriptions, (34) 255.
 - unicolor, life history, (35) 553.
- Chlorotone, effect on development of eggs, (26) 772.
- Chlorpicrin as a fumigant, (39) 558.
- Chlor-xyleneol-sapocresol as a disinfectant, (32) 80.
- Choanataenia infundibuliformis, intermediate host, (35) 577, 683.
- Choanephora cucurbitarum, studies, (36) 848.
- Chocolate—
- analyses, (26) 506; (28) 461; (35) 558.
 - and cocoa, treatise, (26) 662, 710.
 - artificial coloration, (27) 809.
 - copper in, (28) 862.
 - examination, (26) 659; (36) 506.
 - judging, (26) 609.
 - manufacture, (29) 312; (30) 258.
 - manufacture, progress in, (32) 23.

- Chocolate—Continued.
 methods of analysis, (27) 207.
 milk, determination of lactose and sucrose in, (40) 14.
 milk, methods of analysis, (27) 498, 613.
 value in the diet, (29) 664.
- Choeromyia—
 n.spp., descriptions, (26) 559.
 notes, (30) 458.
- Choetochloa palmifolia as a forage crop, (38) 827.
- Chokecherries, black knot affecting, (30) 750.
- Chokecherry aphid, description, (39) 62.
- Cholam—
 in malting operations, (40) 808.
 short smut, studies, (38) 850.
- Cholera—
 Asiatic, transmission, (26) 61; (31) 752.
 evolution of, (39) 285.
 like diseases of birds, (40) 685.
 relation to tomatoes, (27) 766.
 rôle of specific fats in complement fixation, (39) 80.
 toxins and antitoxins, notes, (26) 676.
 vibrio, destruction by periodol, (39) 80.
 virus, action in immune animal organism, (35) 280.
- Cholesterin—
 metabolism of, (32) 764.
 of diet, relation to bile cholesterol and salts, (32) 566.
 origin, (33) 166.
 synthesis of, (34) 168.
 variations during inanition and feeding experiments, (34) 258.
- Cholesterol—
 absorption in intestine, (33) 166.
 absorption, mechanism, (36) 265.
 addition to fat-deficient diet, (36) 366.
 constancy in animals, (33) 69.
 crude, from butter fat, (28) 809.
 determination, (29) 309; (35) 805.
 determination in blood, (35) 13; (39) 716; (40) 15.
 determination in serum, (33) 315.
 effect on growth of white mice, (35) 865.
 excretion by man, (28) 462.
 importance in the organism, (31) 465.
 in blood during fat absorption, (39) 671.
 edible fats, (32) 205.
 growing chickens, (30) 674.
 milk, (26) 775; (40) 11.
 tissues as affected by diet, (33) 754.
 metabolism of eggs during incubation, (33) 472.
 nephelometric values, (39) 311.
 preparation and determination, (30) 501.
 studies, (40) 767.
 synthesis in the animal organism, (30) 675.
- Cholin—
 assimilation by plants, (26) 32.
 determination, (35) 202.
 effect on plant growth, (28) 324.
 effect on sex determination, (28) 68.
 in dried herring roe, (29) 863.
 grape leaves, (27) 731.
 hops, (32) 502.
 rice polishings, (33) 167.
 stachys tubers and citrus leaves, (26) 107.
 sugar beets, (28) 810.
 isolation from oat farina, (31) 309.
 isolation from soils, (28) 418.
 use against tumors, (29) 476.
- Cholina spp., list, (39) 99.
- Cholla fruit—
 analyses, (27) 570.
 nutritive value, (27) 569.
- Chollas as emergency forage, (27) 569.
- Cholomyia inaequipes, notes, (27) 864.
- Cholus—
 cattleyae—
 (cattleyarum), in Wisconsin, (38) 155.
 n.sp., description, (36) 555.
 notes, (40) 754.
 cattleyarum n.sp., description, (36) 360.
 forbesii, introduction into New Jersey, (37) 660.
- Chondriomes in tulip flower, (38) 127.
- Chondriosomes—
 in epidermal cells of *Iris germanica*, (34) 524.
 fungi, (32) 822.
 fungi and algae, (35) 635.
- Chondriosomes—Continued.
 in living plant cells, (29) 217.
 vegetable cells, (34) 428.
 nature of, (35) 226.
 review of literature, (33) 631.
 rôle in secretion, (23) 272.
 studies, (39) 332; (40) 223, 323.
- Chondromyces crocatus, development, (30) 28.
- Chondrosamin, isomeric pentacetates of, (36) 202.
- Chondrus crispus, analyses, (37) 814.
- Chop-feed, analyses, (29) 769; (34) 663.
- Chops, analyses, (27) 364; (31) 73; (32) 862.
- Chordelles, notes, (35) 254.
- Choreutis—
 inflatella, life history, (33) 655.
 parialis, notes, (31) 848.
- Chorizagrotis—
 agrestis, notes, (33) 746; (35) 758.
 auxiliaris, life history, (35) 854.
 auxiliaris, notes, (35) 853.
- Chortophaga viridifasciata, notes, (36) 153.
- Chortophila—
 brassicae, *see* Cabbage maggot.
 cillierura as a rye pest, (38) 557.
 trichodactyla, attacking cucumbers, (34) 454.
- Chou moellier, notes, (26) 833, 835.
- Chowchow, recipes, (28) 715.
- Chremylus rubiginosus, notes, (27) 564.
- Christchurch Technical College, notes, (31) 898.
- Christmas-berry tings, California, notes, (26) 148.
- Christmas trees—
 culture and marketing, (36) 745.
 growing, (35) 746.
- Chromaphis juglandicola—
 control, (39) 461.
 fungus enemy, (39) 464.
 remedies, (33) 557.
 studies (31) 753.
- Chromatophores—
 coloring matters of, (35) 333.
 movement, (38) 426.
- Chrome yellow, effect on linseed oil, (28) 714.
- Chromii sulphas, nature and use, (26) 580.
- Chromium—
 compounds, effect on ferments, (26) 309.
 compounds, effect on plants, (28) 730.
 determination in minerals and rocks, (31) 16.
 fertilizing value, (27) 128.
 in plants, (38) 409.
 in soils, (31) 720.
 oxid green, effect on linseed oil, (28) 714.
 toxic effect on plants, (38) 629.
- Chromogenesis, induced variations in, (33) 630.
- Chromogens—
 formation in plants, (29) 421.
 plant respiratory, absorption of oxygen by, (29) 324.
 purpling, isolation from air potatoes, (28) 505.
 vegetable, oxidation and reduction in, (34) 32; (35) 225.
- Chromoleucites, pigments of, (34) 33.
- Chromophylls in plant and animal world, (26) 710.
- Chromoplasts, origin, (37) 632.
- Chromosome—
 action, hormone theory, (38) 525.
 combinations in the strawberry, (39) 49.
- Chromosomes—
 function, (27) 769.
 function in heredity, (34) 527.
 in wheat, studies and bibliography, (27) 636.
 mammalian, fixation, (40) 662.
 measurements, (28) 766.
 nature and importance, (29) 665.
 relation to heredity, (27) 468.
 relation to hybridization in plants, (40) 817.
 segmentation, (39) 574.
 significance in heredity, (29) 321.
 structure, (29) 67.
- Chromosporium crustaceum n.sp. on rubber, (32) 347.
- Chrosperma muscaetoxicum, toxicity, (39) 886.
- Chrysalids, external sexual characters, (27) 456.
- Chrysanthemum cinerariaefolium—
 betains in, (27) 204.
 culture, (40) 151.
 manganese content, (38) 207.

- Chrysanthemum**—
 crown gall, notes, (37) 252.
 frutescens as a host of eelworm, (34) 349.
 gall fly, *see* *Diarthronomyia hypogaea*.
 leaf miner—
 in Wisconsin, (38) 155.
 notes, (26) 856; (35) 54; (38) 155.
 remedies, (29) 55.
 studies, (32) 451.
 leaf mining fly, notes, (27) 552.
leucanthemum—
 as affected by top dressing, (26) 40.
 dissemination by farm animals, (26) 839.
 midge, notes, (34) 251; (36) 856; (38) 160, 358.
 root tumors or crown gall, treatment, (30) 354.
 Septoria disease, notes, (35) 550.
- Chrysanthemums**—
 as affected by radio-active substances, (32) 34.
 culture, (37) 44.
 culture in greenhouses, (26) 740.
 dimorphism in, (28) 541.
 evolution, (34) 237.
 fertilizer experiments, (26) 739; (40) 741.
 growth in partially sterilized soils, (26) 815.
 growth on sterilized soils, (31) 336.
 insects affecting, (28) 451.
 red spider on, (39) 65.
 spontaneous decapitation of, (31) 844.
 treatise, (28) 543; (40) 540.
 varieties, (34) 232; (38) 446.
 varieties at Wisley, (33) 536.
- Chrysobothris**—
 femorata, *see* Apple-tree borer, flat-headed.
 scitula, notes, (38) 762.
 tranquebarica, studies, (40) 860.
- Chrysocelis lupini** n.g. and n.sp., description, (35) 245.
- Chrysocallis mallochi** n.sp., description, (38) 165.
- Chrysocallis** n.sp., descriptions, (30) 59.
- Chrysolampis lycti** n.sp., description, (31) 459.
- Chrysolite**, solubility of magnesia in, (40) 812.
- Chrysomelians of Ontario**, (31) 155.
- Chrysomelid beetle**—
 evolution, (32) 429.
 notes, (28) 854.
- Chrysomelidae**—
 catalogue, (26) 560.
 of Philippines, (29) 657.
- Chrysomphalus**—
 aonidum (ficus), *see* Florida red scale.
 aurantii, *see* Orange scale and Red scale.
 dictyospermum—
 in California, (35) 658.
 minor, coccinellid enemy, (39) 767.
 mycosis of, (36) 755.
 natural enemies, (39) 566.
 notes, (32) 56.
 on castor bean, (40) 453.
 parasites of, (38) 467.
 pinnulifera, remedies, (34) 552; (36) 754.
 remedies, (36) 655.
 variation in, (38) 460.
 varieties, (37) 462.
 paulistus in Brazil, (40) 165.
 spp., notes, (31) 58.
 spp., remedies, (30) 355.
 tenebriocous, *see* Gloomy scale.
- Chrysomyia**—
 macellaria, *see* Screw-worm.
 megacephala, notes, (29) 482.
 rufifacies in Hawaii, (40) 263.
- Chrysomyxa**—
 abietis, studies, (35) 155.
 rhododendri, studies, (35) 155.
 sp., new to North America, (37) 757.
 spp. on conifers in Scotland, (32) 844.
 vitis n.sp., description, (27) 353.
 weirli n.sp., description, (39) 254.
- Chrysopa**—
 californica—
 destructive to citrus plant lice, (26) 755.
 notes, (28) 250, 457; (29) 261.
 parasitic on red spider, (32) 157.
 studies, (35) 758.
 oculata, notes, (32) 654.
 or golden-eyed fly, notes, (37) 156.
 vulgaris, notes, (27) 862.
- Chrysophagus compressicornis**, notes, (31) 757.
- Chrysophana placida** as a household pest, (37) 854.
- Chrysophanus dispar**, notes, (38) 562.
- Chrysophylectis**—
 endobiotica—
 life history, (40) 848.
 notes, (26) 448; (27) 245; (28) 243, 648; (29) 243; (30) 47, 448; (31) 243; (32) 443, 546; (33) 446, 846, 850; (34) 241; (35) 48; (40) 157, 543, 848.
 studies, (26) 547.
 treatment, (31) 149.
 transfer to Synchryium, (26) 547.
- Chrysophyllum**—
 cainito, cold storage of, (32) 439.
 oliviforme, notes, (27) 862.
- Chrysopidae**—
 feeding habits, (36) 552.
 of Japan, (30) 754.
- Chrysopids**, parasites of, (31) 757.
- Chrysoplatycerus splendens**, notes, (26) 149.
- Chrysopogon parviflorus**, analyses, (30) 565.
- Chrysops**—
 collecting larvae, (40) 757.
 egg-laying habits and early stages, (37) 853.
 spp., transmission of floria by, (36) 86.
 spp., transmission of Trypanosoma equinum by, (31) 82.
- Chrysopus** sp., destructive to purple scale, (26) 757.
- Chrysotoxum coloradensis** n.sp., description, (40) 757.
- Chufas**—
 as a duck food, (30) 545.
 culture experiments, (40) 434.
 culture in Philippines, (26) 361.
 notes, (26) 362.
- Church and country life**, handbook, (36) 92.
- Churches**—
 relation to rural problems, (33) 190.
- rural**—
 conference on, (34) 297.
 cooperation, (37) 593.
 decadence of, (30) 893.
 economic and social force, (37) 90.
 educational opportunities, (32) 388.
 federation, (32) 285.
 handbook, (29) 294.
 improvement, (29) 594.
 in Kansas, (33) 694.
 problems of, (31) 391; (35) 891.
 treatise, (29) 190; (32) 388; (33) 190.
- Churning**—
 in Danish creameries, (28) 776.
 relation to milk fat globules, (26) 477.
- Churns**, notes, (27) 792.
- Churns**, tests, (34) 590.
- Chutes**, frictional resistance in, (30) 885.
- Chutneys**, recipes, (32) 560.
- Chyliza persicorum**, notes, (30) 757.
- Chymase in Solanum elaeagnifolium**, (36) 412.
- Chymology**, physiological and pathological, treatise, (31) 265.
- Chymosin**—
 and pepsin, identity, (26) 107.
 secretion by young animals, (29) 665.
- Cibotium chamissoi**, analyses, (29) 270.
- Cicada**—
 cinctifera, notes, (28) 853.
 net-winged, on olive, (38) 157.
 periodical—
 in 1919, (40) 754.
 Ohio, (35) 658; (37) 258.
 West Virginia, (35) 657.
 western New York, (37) 257.
 life history and bionomics, (34) 754.
 notes, (26) 753, 856; (27) 755; (28) 157, 752; (29) 793; (30) 657; (31) 59, 351; (34) 752; (36) 856; (39) 762.
 on Staten Island, (28) 655.
 popular account, (40) 549.
- Cicadas**—
 in United States, (36) 551.
 notes, (29) 558.
 of Mississippi, (40) 856.
- Cicadellidae**—
 of Missouri, (37) 157.
 of Wisconsin, (37) 761.
- Cicadidae of Japan and Formosa**, (38) 264.
- Cicadula 6-notata**—
 life history, (35) 553.
 notes, (27) 858; (33) 356.

- Cicer**—
 arletinum—see also Chick peas.
 acid secretion of, (34) 525.
 analyses, (30) 558; (31) 258; (28) 368, 572.
 anatomical structure, (31) 314.
 as a green manure for rice, (37) 824.
 culture, (32) 226.
 culture experiments, (27) 336.
 culture in India, (36) 635.
 for pigs, (28) 364.
 loss in weight after harvesting, (38) 635.
 nodule formation, (38) 528.
 seed position in planting, (40) 635.
 water requirements in India, (27) 429.
 culture experiments, (28) 633.
- Cichorium intybus**, see Chicory.
- Cicindelidae** of Indiana, studies, (39) 767.
- Cinnabolum**—
 abelmoschi n.sp., description, (26) 446.
 brevipagis n.sp., description, (30) 240.
 sp., parasitic on apple mildew, (31) 544.
- Cicuta**—
 description, (32) 474.
 maculata, eradication, (27) 733.
 sp., notes, (32) 778.
 spp., chemistry and toxicology, (34) 185.
 toxicity, (30) 880.
 vagans, description, (39) 386.
- Cicutin hydrobromid**, use against tetanus, (37) 79.
- Cider**—
 alcohols in, (39) 113.
 analyses, (32) 207; (38) 114.
 apple jelly, manufacture, (39) 808; (40) 414.
 as affected by preservatives, (30) 665.
 changes in during fermentation and storage, (37) 716; (38) 365.
 chemistry and biology of, (29) 116.
 clarifying with casein, (26) 26.
 defective, utilization, (40) 116.
 fermentation as affected by cold, (27) 461.
 from Minnesota apples, (39) 316.
 industry in England, (37) 416.
 industry in Uruguay, (32) 744.
 manufacture, (33) 209; (38) 806; (40) 116, 808.
 manufacture, new methods in, (29) 798.
 of lower Seine regions, composition, (30) 16.
 press pulp, studies, (34) 256.
 quality as affected by apple stock, (33) 240.
 sickness, (26) 512; (28) 114; (29) 208.
 sickness, treatment, (35) 717.
 single-variety, analyses, (35) 717.
 studies, (40) 414.
 vinegar—
 adulteration, detection, (27) 613.
 composition, (28) 361.
 manufacture from pure apple juice, (30) 16.
 standards, notes, (26) 117.
- Cienfuegosia**, glands of, (39) 431.
- Cigar**—
 ashes, analyses, (38) 626.
 case bearer, notes, (26) 146.
 molds, (31) 613; (35) 749.
- Cigarette beetle**—
 as affected by Roentgen rays, (29) 359; (35) 554; (37) 359.
 in Dutch East Indies, (40) 170, 854.
 in Philippines, (29) 458.
 life history and remedies, (38) 62; (39) 565.
 notes, (26) 453, 856; (31) 249.
 predacious enemies of, (29) 359.
 studies, (40) 758.
- Cimbex americana**, notes, (28) 554.
- Cimex**—
 boueti, biology, (30) 547.
 lectularius, see Bedbugs.
 pipistrelli, relation to trypanosomiasis of bats, (33) 552.
 rotundatus, relation to kala-azar, (28) 655; (37) 357.
 spp., transmission of trypanosomes by, (30) 853.
 studies, (34) 857.
- Cimicifuga**, insecticidal value, (31) 350.
- Cinchona**—
 alkaloids, disinfecting action, (40) 478.
 alkaloids, identification, (39) 506.
 culture, (36) 538; (38) 542.
 culture in Java, (36) 643.
 diseases, notes, (37) 844.
 gray root, notes, (37) 352.
 industry in India, (27) 347.
- Cinchona**—Continued.
 industry in Netherlands East India, (34) 239.
 mopo disease, (34) 749; (36) 145.
 red mite of, (40) 656.
 treatise, (33) 343.
 white root fungus, (39) 858.
- Cinchonidin**, methods of analysis, (37) 113.
- Cineol** from black sage, (33) 202.
- Cinnamic aldehyde**—
 determination in cinnamon, (40) 15.
 preservative action, (26) 157.
- Cinnamomum**—
 camphora—
 culture and preparation, (27) 442.
 insect enemies of, (31) 849.
 oliveri, essential oil of, (36) 611.
- Cinnamon**—
 disease, notes, (35) 153.
 effect on microorganisms, (35) 557.
 germicidal effect, (36) 863.
 ground, analyses, (29) 462.
 ground, distribution of sand in, (26) 564.
 preservative value, (38) 469.
- Cinquefoil**, shrubby, notes, (29) 741.
- Cintractia sorghi vulgaris**—
 inoculation of Guinea corn, (34) 644.
 studies, (38) 850.
- Cioidae**—
 catalogue, (26) 560.
 of America north of Mexico, (38) 768.
- Cionus scopulariae**, life history, (26) 452.
- Circular** scale, notes, (28) 854.
- Circumhorizontal** arc, (35) 618.
- Cirina butyrospermi**, notes, (28) 555.
- Cirphis unipuncta**, see Army worm.
- Cirrhencyrtus** n.g., erection, (40) 359.
- Cirrospiloideus guamensis** n.sp., description, (31) 62.
- Cirrospilopsis** sp. from Maryland, (38) 565.
- Cirrospilus**—
 flavoviridis n.sp., description, (30) 661.
 ovisugosus n.sp., description, (34) 363.
- Cirrus**—
 bands and the aurora, (34) 117.
 directions at Melbourne, (35) 116.
- Cirsium**—
 arvense, analyses and feeding value, (33) 70.
 arvense, root system, (37) 542.
 spp., geographical distribution, (26) 335.
- Cisidae** of America north of Mexico, (38) 768.
- Cissus lacinata** and *Opuntia blakeana*, structural relationship, (28) 332.
- Cisthene**, new, of North America, (37) 564.
- Citellus**—
 beecheyi—
 and subspecies, control, (33) 456.
 new microfilaria from, (26) 653.
 tuberculosis in, (26) 484.
 chrysodeirus, susceptibility to plague (26) 59.
 columbianus, immunity to spotted fever, (31) 160.
 elegans, notes, (28) 450; (30) 249.
 spp., in Colorado, (28) 652.
- Citral**—
 determination, (39) 716.
 determination in essential oils, (28) 114.
- Citranges**—
 and citrandarin, susceptibility to canker, (39) 857.
 culture experiments, (28) 235.
 culture in southern Texas, (32) 337, 539.
 paper on, (29) 839.
 resistance to cold (39) 843.
- Citrates**—
 action on isolated intestine, (37) 471.
 toxic action, (40) 465.
- Citric acid**—
 assimilation by plants, (31) 426.
 decomposition by sunlight, (30) 431.
 determination, (26) 509; (36) 317.
 determination in—
 citrates and lemon juice, (31) 612.
 fruit, (27) 497; (32) 297.
 milk, (36) 415.
 presence of other acids, (28) 806; (31) 714.
 tomato products, (26) 25.
 effect on—
 bacterial flora of soils, (28) 815.
 bread fermentation, (27) 268.
 carbon assimilation of plants, (27) 525.
 fungi, (28) 444.

Citric acid—Continued.

effect on—continued.

- germination of seeds, (36) 29.
- nitrification in soils, (28) 218.
- extraction with ether, (37) 414.
- fermentation in milk, (26) 112.
- formation from glycerin by fungi, (30) 805.
- from limes and lemons, (33) 540.
- in wines, (32) 613; (36) 808.
- methods of analysis, (27) 205.
- solubility of mineral phosphates in, (30) 721.
- toxicity, (28) 661.

Citricola scale—

- control, (39) 461, 463.
- notes, (34) 255.
- studies, (33) 558.

Citriculture, summer practice course in, (34) 292.

Citromyces—

- glaber, proteolytic activity, (40) 721.
- n.spp., descriptions, (27) 543.
- siderophilus, notes, (27) 527.
- spp., behavior in iron solutions, (27) 527.
- spp., notes, (28) 562.
- spp., relation to *Penicillium*, (38) 448.
- spp., studies, (29) 547.

Citron—

- candied, analyses, (26) 157.
- candied, labeling, (27) 269.
- dried, preparation and use, (29) 462.
- food plant of portable scale, (26) 756.
- preserving, calcium content, (39) 747.

Citronella—

- grass—
 - fertilizer experiments, (36) 332.
 - insects affecting, (28) 249.
 - residue, analyses and fertilizing value, (36) 417.
- oil, production, (36) 417.

Citronellal, determination in essential oils, (28) 114.

Citro-phosphate solutions, nature of, (32) 115.

Citropsis spp., studies, (30) 643.

Citrus—

- spp., analyses and digestibility, (27) 871.
- vulgaris, analyses and digestibility, (32) 167.
- vulgaris, notes, (29) 362.

Citrus—

- anthracnose, notes, (29) 650.
- aphis, notes, (26) 755.
- Armillaria root rot, (39) 152.
- aurantium, betains in, (27) 204.
- aurantium, isolation of stachydrin from, (26) 107.
- bacterial disease, new, studies, (37) 153, 154.
- bacterial spot, studies, (38) 552, 553.
- bark disease in Florida, (35) 850.
- bark rot, studies, (35) 249.
- black—
 - blight, notes, (30) 746.
 - fly, *see* *Aleurocanthus woglumi*.
 - scale, remedies, (39) 461.
 - spot and brown spot, treatment, (37) 352.
- blast in California, (39) 252.
- blast, notes, (38) 354.
- blast, studies, (37) 153.
- butterfly, notes, (34) 851.
- canker—
 - cause, (33) 149.
 - control, (39) 56, 252, 253, 458, 857.
 - control in Florida, (36) 52, 352; (37) 556.
 - control in Porto Rico, (33) 441.
 - description, (35) 656.
 - eradication, (37) 556.
 - identification, (36) 352.
 - in Alabama, (33) 248.
 - Florida and the Gulf States, (33) 149.
 - Philippines, (36) 651; (37) 745.
 - South Africa, (37) 657.
 - inoculation experiments, (37) 843.
 - n.sp., description, (33) 149.
 - notes, (32) 53, 245, 548; (34) 649, 845; (37) 556, 657; (39) 152, 850, 864; (40) 349.
 - quarantine in United States, (36) 245.
 - resistance of tangelos to, (40) 247.
 - studies, (31) 54; (32) 345; (34) 447; (35) 152, 550, 850; (36) 850, 851; (37) 656, 843; (39) 253, 457, 458, 757, 857; (40) 544, 851.
- chlorosis, description, (28) 850.
- collar rot, notes, (40) 748.
- crown gall, (28) 447.

Citrus—Continued.

die-back—

- cause, (31) 450.
- cause and treatment, (38) 151.
- in Queensland, (33) 56.
- notes, (27) 344.
- studies, (29) 237, 248.

Diplodia diseases, (39) 152.

diseases—

- and pests, relation to Argentine ant, (39) 155.
- in Florida, (40) 158.
- Isle of Pines, (34) 446.
- Jamaica, (35) 458.
- Porto Rico, (35) 748; (37) 246; (40) 47, 52.
- West Indies, (37) 452.
- Western Australia, (33) 846.
- notes, (26) 549; (27) 50, 750; (29) 350; (31) 152, 244, 645, 646; (37) 656; (39) 56, 149, 753; (40) 155.
- studies, (27) 50, 350; (32) 238; (33) 55, 149, 549, 649; (34) 446; (35) 849; (39) 457.

fruit—

- juices, analyses, (31) 461.
- juices, preparation, (33) 316.
- rot, investigations, (32) 346.
- rot, notes, (31) 750.
- rots, descriptions and treatment, (28) 245.
- stain, notes, (34) 354.
- fruits—*see also* Lemons, Oranges, etc.
- abnormal water relations, (37) 834.
- action of vanillin and limestone on, (37) 656.
- Argentine fly on, (40) 758.
- fruits as affected by—
 - freezing, (40) 247, 539.
 - kerosene oil and alcohol, (27) 145.
 - oil insecticides, (29) 354.

fruits—

- asexual reproduction of seeds, (31) 533.
- bibliography, (26) 441; (28) 742.
- blemishes, notes, (26) 549.
- breeding, (27) 441.
- bud variations in, (36) 538.
- budding, (32) 143.
- budding and grafting, (39) 243.
- changes in during ripening, (29) 641.
- cost of distributing, (33) 141.
- cost of production, (37) 144.
- cotton stainer injury, (40) 353.
- cover crops for, (33) 535; (34) 344, 736.
- cull, utilization, (37) 313.
- culture, (35) 542, 840; (37) 345; (38) 40, 446.
- fruits, culture—
 - experiments, (27) 744; (28) 142; (31) 441; (38) 845.
 - in Brazil, (36) 241, 743.
 - Florida, (33) 642.
 - Gulf States, (29) 542.
 - Japan, China, and Formosa, (37) 834.
 - lower Rio Grande Valley, (26) 47.
 - New South Wales, (33) 841.
 - Philippines, (30) 644; (34) 635; (37) 745.
 - Spain, (32) 236.
 - Surinam, (33) 43.
 - Transvaal, (37) 545.
- treatise, (30) 444.

fruits—

- cytological and experimental studies, (28) 524.
- dying in Queensland, (35) 654.
- enemies of, (28) 352.
- fertilizer experiments, (27) 344, 350, 841; (29) 237, 637; (31) 634, 723, 742; (33) 24, 48, 241, 535, 642; (35) 448, 839; (36) 139; (37) 43, 649; (39) 448.
- fertilizer needs in Porto Rico, (40) 44.
- fertilizers for, (36) 743; (38) 144.
- freeze injury, (39) 448, 843.
- frost damage in transit, (37) 649.
- frozen, greening, (28) 662.
- frozen, separation by floating, (30) 206.
- fumigation, (31) 550; (37) 634; (40) 855.
- fumigation in Spain, (28) 754.
- green manuring experiments, (39) 31.
- handling, (32) 234.
- fruits, handling—
 - and packing, (39) 545.
 - and shipping, (34) 235.
 - and storing, (31) 338.
 - in Italy, (26) 47.

Citrus—Continued.

fruits—

- improvement, (28) 541, 736; (37) 144; (39) 447, 448, 845.
 - improvement by bud selection, (32) 439; (34) 740.
 - in India, (28) 754.
 - industry, cooperation in, (38) 43.
 - industry in California, (30) 197; (39) 846.
 - industry in Porto Rico, (32) 745.
 - injury from limestone, (39) 458.
 - insects affecting, (26) 553, 858; (27) 453; (28) 457, 754; (30) 853; (31) 751; (32) 56; (33) 353, 746; (34) 60, 349, 449, 652; (35) 355, 657; (36) 457, 754; (37) 255; (38) 459, 460; (39) 59, 155, 160, 461, 557, 767; (40) 853.
 - inspection in Florida, (36) 467, 864.
 - irrigation, (33) 779; (35) 787; (36) 784; (37) 319; (39) 591.
 - irrigation experiments, (36) 841; (37) 186.
 - irrigation, overhead, (27) 788.
 - law of Florida, (28) 196; (30) 740.
 - lightning injury, (37) 656.
 - lime-magnesia requirements, (29) 520.
 - marketing, (38) 595.
 - methods and cost of distributing, (34) 835.
 - monograph, (35) 448.
 - mulched basin culture, (39) 448.
 - mulching experiments, (34) 740; (36) 841.
 - nematode affecting, (33) 550.
 - new genus, from Australia, (34) 235.
 - new, paper on, (29) 839.
 - nitrogen nutrition, (37) 318, 353.
 - notes, (29) 235.
 - nursery stock, bench rooting of, (33) 540.
 - oxidases in, (31) 826.
 - peeling machine for, (36) 416.
 - production and commerce in, (31) 48.
 - propagation, (29) 542.
 - protection against frost, (27) 414, 509; (29) 542; (32) 541; (33) 48; (35) 537.
 - ratio of solids and acids, (39) 49.
 - scale insects affecting, (29) 654.
 - seed formation in, (32) 236.
 - spotting of, (35) 50, 144.
 - spraying, (37) 460.
 - stocks for, (33) 736; (35) 144.
 - susceptibility to Mediterranean fruit fly, (32) 655.
 - treatise, (33) 441.
 - variations and hybridization in, (31) 48.
 - varieties, (28) 533; (38) 40.
 - wild and cultivated, (39) 142.
- galls, notes, (28) 651.
- gray mold or Botrytis disease, studies, (35) 152.
- grove soils, studies, (39) 421.
- groves—
- Argentine ant in, (39) 155.
 - cost of smudging, (29) 339.
 - intercropping, (39) 47.
 - lightning injury, (40) 645.
 - plowsole in, (40) 417.
- gum diseases, notes, (27) 546.
- gummosis—
- description, (34) 353.
 - in California, (31) 449.
 - induced by chemicals, (31) 449, 749.
 - notes, (28) 246; (37) 846; (39) 253, 653.
 - studies, (29) 247; (30) 749; (37) 656.
 - treatment, (27) 40; (33) 55.
- heart rot, treatment, (33) 55.
- hybrids, studies, (26) 441.
- ichangensis, description, (29) 839.
- ichangensis latipes, description, (29) 840.
- japonica, monograph, (31) 48.
- knot disease, investigations, (27) 652.
- knot, notes, (36) 846; (37) 839.
- leaf disease, notes, (37) 453.
- leaf miner, notes, (33) 655.
- mal di gomma, studies, (33) 550.
- malnutrition diseases, investigations, (31) 237.
- mealy bug—
- control, (34) 255; (37) 158.
 - natural enemies of, (26) 149.
 - notes, (29) 652; (32) 56; (38) 464.
 - studies, (34) 162.
- medici, culture in California, (40) 246.
- melanose—
- description and history, (40) 158.
 - distribution, (38) 737.

Citrus—Continued.

melanose—Continued.

- studies, (28) 651; (31) 750; (39) 56, 457.
 - treatment, (37) 656.
- mildew, notes, (34) 649.
- mite, description, (36) 261.
- mites, notes, (32) 557.
- mitis as a stock for cultivated citrus, (32) 143.
- mosaic disease or mottling, studies, (35) 745.
- mottled leaf, notes, (34) 353.
- mottled leaf, studies, (28) 850; (30) 51; (35) 754; (37) 352, 353.
- nursery stock diseases, notes, (34) 240.
- pest, new, (40) 169.
- plant lice, natural enemies of, (26) 755.
- pollen, long-distance shipment of, (34) 43.
- powdery mildew in southern California, (34) 447.
- ranch employees, housing, (39) 795.
- red spider in Oregon, (28) 859.
- red spider, remedies, (29) 459.
- root diseases, notes, (32) 442.
- root nematode, (28) 850; (31) 449.
- rust mite, life history and habits, (28) 457.
- scab—
- cause, (37) 556.
 - in Porto Rico, (38) 454.
 - notes, (28) 246; (29) 242; (31) 750.
 - studies, (27) 653.
 - treatment, (40) 52.
- scale—
- gray, remedies, (40) 454.
 - parasites as affected by sprays, (40) 52.
 - remedies, (38) 58.
- scaly bark, new fungus of, (26) 145.
- scaly bark, notes, (37) 846.
- seedlings as affected by irrigation water, (34) 235.
- soils, fertilization, (29) 317.
- sooty mold, remedies, (36) 754.
- sour rot, notes, (37) 843.
- sour scab, studies, (36) 352.
- stem-end rot—
- cause, (28) 549.
 - distribution, (38) 757.
 - notes, (26) 449; (30) 841; (31) 750.
 - prevention, (39) 252, 253.
 - studies, (28) 651; (29) 247.
- stocks, tests, (29) 637.
- thrips—
- notes, (29) 453.
 - remedies, (33) 354.
 - studies, (38) 763.
 - summary of information, (40) 649.
- trees—
- frosted, pruning, (29) 542.
 - fumigation, (39) 161, 463.
 - old, renewing, (35) 343.
 - phosphorus content of soils under, (39) 421.
 - spraying in Florida, (39) 160.
- trifoliata, asexual reproduction of seeds, (31) 533.
- vegetation as affected by cement dust, (35) 313.
- white fly, see White fly, citrus.
- witherip—
- description, (30) 746.
 - notes, (34) 354; (37) 453.
 - studies, (28) 749.
- wood rot, description and treatment, (38) 51.
- City persons who desire to farm, suggestions for, (31) 787.
- City refuse, utilization, (28) 224.
- Cladius pectinicornis, parasite of, (29) 359.
- Cladochytrium—
- graminis, description and treatment, (29) 751.
 - mauryi n.sp., description, (32) 346.
 - olivieri n.sp., description, (32) 346.
- Cladophora sp., carotinoid content, (31) 803.
- Cladosporium—
- brunneoatrum, notes, (27) 350.
 - brunneoatrum, treatment, (33) 149.
- carpopophilum—
- description, (35) 654.
 - dusting experiments, (39) 55.
 - infection of peaches with, (31) 449.
 - notes, (30) 537; (36) 649, 751; (38) 550; (40) 53.
 - studies, (36) 545.
- citri—
- in Porto Rico, (39) 56.
 - notes, (27) 350; (28) 246; (30) 47; (31) 539; (34) 446; (36) 348; (37) 556; (40) 47, 52.

Cladosporium—Continued.

- citri—continued.
 - on grapefruit, (35) 748.
 - studies, (27) 653; (36) 353.
 - cucumerinum—
 - notes, (32) 641; (35) 246, 750.
 - studies, (36) 248; (38) 449.
 - virulence, (37) 840.
 - disease on sorghum, (38) 545.
 - epiphyllum, parasitism, (32) 640.
 - fulvum—
 - description, (26) 849; (27) 249; (30) 50.
 - notes, (26) 649; (27) 651; (31) 644; (34) 841.
 - resistance of tomatoes to, (33) 247.
 - studies, (39) 854.
 - treatment, (26) 849; (30) 50, 244; (35) 350.
 - fulvum violaceum—
 - n.var., description, (30) 749.
 - notes, (31) 748.
 - studies, (32) 148.
 - graminum—
 - affecting wheat seed, (31) 148.
 - notes, (37) 553.
 - studies, (30) 846.
 - herbarum—
 - agave-echeveria, notes, (32) 149.
 - citricolium n.var., description, (26) 145.
 - in frozen reindeer meat, (30) 761.
 - notes, (27) 763; (28) 659; (29) 161, 243, 845; (31) 347, 542, 844; (32) 644, 843; (33) 146; (38) 646.
 - penetration of egg shells by, (29) 765.
 - relation to citrus gummosis, (29) 247.
 - relation to iodine compounds, (29) 133.
 - source of nitrogen for, (27) 226.
 - studies, (26) 749; (38) 849.
 - toxicity to bees, (38) 564.
 - laricis, notes, (29) 156.
 - paeoniae, notes, (33) 56.
 - sp., notes, (31) 646.
 - sp. on chrysanthemums, (31) 844.
 - sp. on tea, (38) 354.
 - spp., studies, (30) 349.
 - syringae n.sp., description, (37) 550.
- Cladostephus verticellatus, analyses, (37) 814.
- Clam—
- beds, inspection in New Jersey, (28) 862.
 - chowder, examination, (31) 659.
 - shells, crushed, analyses, (36) 27.
- Clams—
- canned, industry in United States, (31), 67.
 - creatin and creatinin content, (31) 760.
 - culture, (27) 472.
 - examination, (26) 868; (28) 166; (31) 64; (32) 854; (36) 159.
 - handling and marketing, (31) 63.
 - preparation for market, (32) 357.
 - sewage-polluted, danger from, (27) 866.
 - soaking in fresh water, (26) 868.
 - transmission of diseases by, (30) 368.
- Clania variegata, notes, (31) 849.
- Clark Fork of Columbia River, hydrography, (32) 279.
- Clasterosporium—
- amygdalearum, notes, (28) 443.
 - carpopophilum, notes, (35) 454.
 - degenerans, notes, (37) 652.
 - maydicum n.sp., notes, (37) 148.
 - putrefaciens, notes, (34) 350; (35) 245.
- Clastoptera spp., life history, (36) 458.
- Clathrus sp., notes, (27) 749.
- Clausena lansium, description, (32) 742.
- Claviceps—
- pasali—
 - life history and poisonous properties, (36) 449.
 - poisoning in cattle, (39) 891.
 - toxicity, (34) 676.
 - purpurea—
 - infection experiments, (28) 546.
 - notes, (31), 539; (33) 146; (34) 845.
 - on Manitoba wheat, (40) 849.
 - on oats, (27) 149.
 - sclerotia, toxicity, (36) 179.
- Clay—see also Soils, clay.
- analyses, (28) 215.
 - as affected by hydroxyl ions, (31) 216; (32) 318.
 - colloidal, notes, (34) 816.
 - colloids in, (30) 718, 807; (32) 318.
 - composition, (27) 409.

Clay—Continued.

- deposits in Virginia coastal plain, (29) 513.
 - determination in soils, (27) 7.
 - determination of fineness, (30) 422, 817.
 - distribution in soils, (28) 28.
 - drainage tile, tests, (29) 685.
 - effect of fineness on strength of mortar, (33) 781.
 - effect on loamy land, (29) 19.
 - flocculation by soluble salts, (27) 620.
 - new reaction for, (33) 610.
 - plasticity, (27) 499; (28) 29.
 - plasticity and cohesion, (30) 214.
 - plasticity and origin, (35) 16.
 - plasticity, measuring, (33) 811.
 - red boulder of Netherlands, studies, (26) 813.
 - red saline, composition, (27) 619.
 - role of microorganisms in formation, (27) 619.
 - studies, (35) 211.
 - suspensions—
 - coagulation by electrolytes, (31) 618.
 - formation of layers in, (39) 420.
- Clays, native, white and color washing with, (26) 189.
- Cleaning fluid, effect on germination of seeds, (26) 820.
- Clematis—
- stem rot, studies, (33) 650.
 - stem rot and leaf spot, studies, (31) 347; (34) 249.
 - vitalba, chemical constituents of, (32) 711.
- Clemson College, notes, (26) 194, 495, 696; (27) 199, 800; (29) 98, 399; (30) 398, 600, 900; (31) 198; (32) 600; (34) 199; (36) 197, 696, 899; (37) 300; (38) 98, 499, 800; (40) 398.
- Cleome—
- integrifolia, geographical distribution, (26) 335.
 - rubella, analyses and digestibility, (27) 871; (32) 167.
- Cleonius—
- calandroides, notes, (29) 761.
 - canescens, notes, (28) 161.
 - mendicus, notes, (36) 355.
 - sparsus, notes, (32) 651, 652.
 - spp., notes, (35) 364.
- Cleonymidae of Australia, (39) 154.
- Cleora pampinaria, see Cranberry spanworm.
- Cleptomycetes—
- lagerheimianus, n.comb., (40) 133.
 - n.g. from the Andes, (40) 133.
- Clerada apicicornis sucking blood, (38) 557.
- Clianthus dampieri, hybridization experiments, (26) 834.
- Click beetle, spotted, studies, (33) 63.
- Climatology—see also Meteorology.
- and cropping systems, correlation, (34) 603.
 - plant growth at different elevations, (39) 809.
 - plant growth, relationship, (30) 16.
 - sun spots, correlations, (40) 416.
 - types of farming, (40) 116.
 - weather, treatise, (28) 211.
- as a factor in pollination of grasses and legumes, (37) 735.
- as affected by—
- forests, (29) 642, 842; (30) 743; (31) 716.
 - reservoirs, (27) 509.
 - surface slope, (27) 616.
 - volcanic dust, (29) 720; (32) 509; (33) 806.
- changes in, (30) 815; (31) 20, 509, 510, 717; (32) 118; (33) 19; (34) 14; (35) 14, 210, 619; (37) 15; (38) 15, 415, 718.
- changes in, treatise, (32) 417.
- effect on—
- agriculture, (36) 417; (37) 209; (39) 317.
 - agriculture in California, (34) 114.
 - agriculture in Germany, (27) 617; (29) 811.
 - apples, (26) 45.
 - burning quality of tobacco, (38) 239.
 - cattle ticks, (26) 458; (28) 758.
 - composition of plant oils, (37) 418.
 - composition of wheat, (26) 133; (29) 834, 835; (30) 440; (37) 38.
 - crop systems and farm operations, (34) 308; (38) 414.
 - cultivated crops, (33) 825.
 - flowering of plants, (26) 429.
 - growth of date palms, (31) 326.
 - mineral content of feeds, (23) 364.
 - Oenothera, (28) 733.
 - pecans, (34) 151.
 - protein content of wheat, (30) 836.

Climate—Continued.

- effect on—continued.
 - quality of sugar beets, (28) 43.
 - soil temperature, (34) 319.
 - soils, (31) 214; (35) 210.
 - tree growth, (37) 450, 837.
 - yield of corn, (28) 433.
- of Abyssinia, (33) 807.
- Africa, (26) 715.
- Alaska, (35) 295.
- America, types of, (30) 814.
- Anne Arundel Co., Maryland, (39) 419.
- arid America, changes in, (31) 509.
- Australia, (28) 27; (30) 511; (32) 118, 718, 811.
- Belle Fourche reclamation project, (40) 314.
- British Columbia, (31) 316.
- California, (31) 212, 213.
- Canada, (32) 25, 510; (34) 208; (38) 618.
- Chicago, (32) 211.
- cities as affected by artificial heating, (26) 214.
- city and country, (27) 316.
- Cuba, (38) 319.
- Duluth, Minnesota, (31) 718.
- Dutch East Indies, (30) 697.
- East Friesland, (30) 821.
- Egypt, (34) 413.
- England and Wales, (30) 510.
- England, variations in, (27) 510.
- France, (36) 510.
- France and Belgium, (38) 511.
- Hertfordshire, (34) 320.
- historical times, (32) 418.
- Honolulu, (26) 614.
- Illinois, (39) 318.
- Iowa, (28) 316.
- Long Island, (38) 209.
- Michigan, (39) 320.
- Minnesota, (35) 209.
- Missouri, changes in, (26) 237.
- Montana, (32) 510; (36) 894.
- New South Wales, (32) 316.
- New South Wales, relation to soils, (26) 216.
- New York in relation to agriculture, (32) 118.
- New Zealand, (31) 21; (33) 807; (35) 210.
- 1912, (28) 716.
- North America, fluctuation, (28) 315.
- northwest Minnesota, (33) 617.
- Ohio, (26) 715; (27) 211.
- Pavlovsk, (35) 719, 809.
- Pennsylvania in 1682; (34) 414.
- Porto Rico, (28) 414.
- Prince George's Co., Maryland, (27) 116, 816.
- Roumania, (35) 620.
- rubber producing countries, (33) 509.
- Salt Lake City, (38) 319.
- San Diego, California, (31) 21.
- San Francisco, (29) 415.
- Savoy, (35) 346.
- small areas, studies, (26) 516.
- South Africa, changes in, (30) 815.
- southeast Russia, (36) 510.
- southern peninsula of Michigan, (28) 422.
- State College, Pennsylvania, (34) 115.
- Switzerland, (38) 14.
- Switzerland, treatise, (27) 15.
- Tennessee, (35) 795; (38) 618.
- Texas, (33) 788.
- the Far East, (30) 46.
- Utah, (26) 416; (29) 811.
- west Africa, (33) 807.
- western and equatorial Africa, (36) 208.
- Wisconsin, (28) 26.
- relation to—
 - agricultural production in Australia, (36) 209.
 - codling moth, (28) 415.
 - crop adaptation in New Mexico, (40) 18.
 - crop centers, (39) 734.
 - desert mountain vegetation, (36) 27.
 - farm management, (39) 615.
 - horticulture, (29) 40.
 - plant distribution in United States, (40) 130.
 - plant growth, (26) 429; (29) 719; (33) 116; (35) 328; (36) 809; (37) 15, 725.
 - seasonal rainfall, (39) 511.
 - soil formation, (34) 514.
 - soils, (30) 514.

Climate—Continued.

- relation to—continued.
 - sun spots, (28) 211; (38) 114.
 - tropical agricultural zones, (26) 118.
 - tropical agriculture, (30) 317.
 - volcanoes, (29) 720, 721.
 - soils, and plant growth, relationship, (26) 516.
 - treatise, (39) 16.
 - weather, element in study of, (33) 807.
- Climates—
 - of the earth, (28) 414.
 - past and present, of crop plants, (40) 616.
- Climatic—
 - areas of United States, (29) 719; (30) 118.
 - charts of Savannah, (27) 316.
 - conditions and plant distribution in United States, (28) 212.
 - cross-sections of United States, (28) 716.
 - forest formations of Cape Breton Island, (40) 152.
 - gradient, investigations, (26) 821.
 - index for plants, (35) 732; (36) 824; (38) 627.
 - phenomena, frequency curves, (36) 718.
 - provinces of western United States, (32) 315.
 - subdivisions of United States, (34) 14, 413.
 - zones, shifting of, (30) 416.
- Climatological—
 - averages, notes, (28) 415.
 - data, *see* Meteorological observations.
 - investigations, geographical aspects, (32) 315.
 - summaries, (29) 121.
- Climatology—
 - in Belgium, (30) 17.
 - of coffee district of Sao Paulo, Brazil, (26) 810.
 - Colorado, (28) 25; (39) 719.
 - Philippines, (26) 318.
 - Quebec, (34) 715.
 - State College, Pennsylvania, (35) 507.
 - United States, (31) 212, 415, 615.
 - relation to fruit culture and agriculture, (29) 15.
 - résumé, (28) 414.
 - station of Juvisy, report, (27) 211.
 - temperature coefficients in, (30) 117.
 - textbook, (26) 613.
 - use in agriculture, (26) 613.
- Climbers, woody, culture (31) 140.
- Clinker as a sewage filtering material, (28) 789.
- Clinostat, multiple, description, (29) 421; (35) 431.
- Clisiocampa—*see also* Malacosoma and Tent caterpillar.
 - azteca, notes, (26) 348.
- Clitocybe—
 - gigantea, studies, (26) 446.
 - infundibuliformis, hydrocyanic acid in, (26) 228.
 - thuilensis n.sp., notes, (37) 630.
- Clitoria cajanifolia—
 - as green manure, (36) 324.
 - as host plant of pink disease, (35) 155.
 - fertilizing value, (34) 34.
- Clivia, greenhouse disease of, (37) 353.
- Clonal varieties, inheritance in, (37) 240.
- Clonorchis sinensis, life history and morphology, (34) 858.
- Clonostachys sp., relation to potato stem lesions, (39) 649.
- Closterocerus—
 - cinctipennis, parasitic on pear slug, (26) 863.
 - formosus, studies, (28) 560.
 - n.sp. from California, (38) 565.
 - n.spp., descriptions, (30) 59.
 - utahensis, notes, (39) 870.
- Clostridium—
 - butyrium in bread leaven, (35) 163.
 - gelatinosum, notes (29) 153.
 - pasteurianum—
 - decomposition of silicates by, (31) 121.
 - fixation of nitrogen by, (38) 427.
 - in Russian soils, (38) 428.
- Cloth—
 - examination, (30) 666.
 - making, textbook (40) 899.
 - waste, analyses, (28) 523.
- Clothes—
 - louse, *see* Pediculus spp.
 - moth, life history, (38) 657.
 - moth, remedies, (27) 565; (32) 650; (33) 62; (39) 762.
 - moth, webbing, predacious, (38) 557.

Clothing—

- and health, textbook, (36) 396.
- disinfection, (32) 456.
- dissemination of typhoid fever by, (31) 68.
- manual, (36) 497.
- notes, (32) 461.
- problem in United States Navy, (34) 167.
- removal of stains from, (33) 114.

Cloud—

- aurelia alto-cumulus, (34) 615.
- camera, description, (33) 717.
- shadow projection, paper on, (29) 510.
- tower, at San Juan, (36) 19.
- Cloudburst at Cooney, New Mexico, (26) 214.
- Cloudiness in France, (35) 318; (36) 719.

Clouds—

- effect on solar radiation, (28) 315.
- electric induction by, (27) 816.
- formation during forest fires, (27) 816.
- mammato-cumulus, (27) 617, 816.
- scarf, (38) 209.
- significance in weather forecasting, (40) 416.
- snow and rain yield of, (32) 810.
- Cloudy condensation, nuclei, (38) 511, 811.

Clover—

- Alexandrian, notes, (35) 33.
- alsike—
 - analyses, (27) 35.
 - as meadow crop, (40) 136.
 - culture experiments, (28) 431; (32) 431.
 - effect on following crop, (38) 337; (40) 623.
 - following different crops, (40) 135, 624.
 - for irrigated pastures, (39) 434; (40) 432.
 - for wet lands, (37) 229.
 - notes, (31) 839.
 - self-sterility, (38) 426.
 - varieties, (29) 139.
 - variety tests, (40) 232.
- analyses, (28) 469.
- and grass mixtures, tests, (37) 230; (40) 732.
- and timothy—
 - fertilizer experiments, (40) 134.
 - seeding experiments, (40) 231.
 - yields, (40) 735.
- anthracnose, resistance to, (39) 454.
- aphis—
 - alternate hosts, (39) 464.
 - injurious to apples, (33) 253.
 - notes, (40) 649, 650.
 - studies, (32) 755; (39) 360; (40) 354.
 - yellow, studies, (32) 247.
- as affected by—
 - smoke and fine dust, (26) 38.
 - sulphur, (34) 540, 625; (38) 221.
- as an orchard shade crop, (35) 236.
- cover crop, (32) 332.
- forage crop, (31) 829.
- green manure, (30) 124; (38) 27; (39) 326, 816; (40) 24.
- hay crop, (39) 333, 337.
- hog pasture, (39) 779; (40) 771.
- pasture crop, (39) 130, 231, 434, 835.
- source of humus, (40) 724.
- assimilation of nitrogen by, (31) 523.
- bacteria, (39) 338.
- bacteria as affected by acidity, (39) 722.
- bacteria as affected by nitrates, (39) 338.
- beetle, European, in California, (37) 568.
- bird-foot, as meadow crop, (40) 136.
- bird-foot, hydrogen cyanid in, (27) 30.
- bird-foot, in grass mixtures, (37) 735.
- bitter, as a green manure, (34) 36.
- bloat, treatment, (33) 388, 698; (34) 581.
- blooms, structure, (33) 27.
- breeding experiments, (32) 532.
- breeding for disease resistance, (28) 746.
- bur—
 - analyses, (28) 42.
 - as cover crop, (32) 431.
 - forage crop, (38) 827.
 - green manure, (39) 31.
 - pasture crop, (37) 533; (39) 231.
 - chloroform extract of, (31) 71.
 - composition, (27) 668.
 - culture, (34) 138.
 - culture and uses, (28) 42.
 - culture experiments, (28) 231.
 - culture for winter forage, (38) 735.
 - digestibility, (27) 669; (37) 168.
 - leaf spot of, (36) 450.

Clover—Continued.

- bur—continued.
 - mineral constituents, digestibility, (40) 769.
 - notes, (29) 299; (34) 139.
 - seed, hastening germination, (32) 829.
 - studies, (28) 656.
 - varieties, (38) 32.
- button, (35) 440.
- canker, notes, (28) 150, 547; (29) 150, 446, 447; (30) 648.
- canker, studies, (27) 849.
- Chilian, notes, (31) 134.
- classification of varieties, (27) 31.
- composition and digestibility, (27) 669.
- composition at different stages, (32) 331; (39) 836.
- cooperative experiments, (27) 430.
- cost of production, (29) 699; (32) 527, 688; (35) 691.
- cowgrass, notes, (30) 434.
- creatinin in, (26) 419.
- crimson—
 - analyses, (31), 863.
 - as cover crop, (32) 431; (37) 833.
 - forage crop, (33) 225.
 - green manure, (32) 423; (37) 320; (40) 24.
 - winter cover crop, (40) 133.
 - culture, (27) 32, 337; (29) 633; (30) 138, 335; (31) 38; (32) 527; (34) 138.
 - culture experiments, (28) 231, 735; (32) 132; (33) 33; (34) 227.
 - culture in Porto Rico, (29) 631.
 - fertilizing value (35) 125.
 - following various crops, (40) 829.
 - germination, (39) 444.
 - improvement, (37) 136.
 - inoculation experiments, (34) 138.
 - liming experiments, (34) 132; (37) 428; (38) 21.
 - nitrogen residue of roots and stubble, (37) 29.
 - radio-active fertilizers for, (31) 31.
 - Sclerotium wilt, (39) 52.
 - seed harvester for, (39) 292.
 - seed production, (32) 732.
 - utilization, (31) 38.
 - yields, (30) 134.
- crown rot, notes, (28) 545.
- culture, (32) 132; (39) 834.
- culture—
 - experiments, (26) 422; (29) 631, 735; (30) 632; (32) 430, 528, 529, 530; (33) 33, 830; (34) 736; (35) 528; (36) 32; (37) 30, 131, 227, 529; (38) 132, 133, 229, 634, 825; (39) 124, 125, 217, 334, 335, 436, 437; (40) 735.
 - for silage, (26) 574.
 - in cotton belt, (32) 534.
 - India, (37) 232.
 - Mexico, (30) 138.
 - North Carolina, (31) 132.
 - sand hills of Nebraska, (35) 827.
 - the Ozarks, (29) 428; (38) 217.
 - Washington, Oregon, and Idaho, (38) 825.
 - manual, (29) 140.
 - on Wisconsin drift soil, (36) 623.
 - under dry farming, (30) 435; (33) 632; (36) 528.
 - under irrigation, (33) 228.
 - with fruit trees, (33) 534.
- cut, analyses, (26) 665; (28) 464; (29) 769; (34) 169, 467; (38) 665; (40) 571.
- cutworm, notes, (27) 659.
- cutworm, studies, (29) 455.
- disease, new, description, (33) 346.
- diseases—
 - in Ohio, (39) 754.
 - in Russia, (36) 748.
 - notes, (30) 351, 647; (31) 841; (35) 245; (39) 532.
 - studies, (28) 746; (33) 547.
- drought resistance in, (30) 526.
- drying, (27) 669.
- effect on—
 - acid soils, (40) 620.
 - companion crop of wheat, (32) 432.
 - fruit trees, (26) 640.
 - milk and butter, (34) 570.
 - soil nitrogen, (27) 322; (29) 211.
- Egyptian, see Berseem.

Clover—Continued.

- electroculture experiments, (27) 231.
- feldspar for, (40) 515.
- fertilizer experiments, (26) 422, 631, 831; (27) 24, 628; (28) 325, 735; (30) 25, 820; (31) 430; (32) 322, 629; (33) 326, 331, 831; (34) 517, 723; (35) 220, 629, 724, 728; (36) 121, 217, 626; (37) 126; (38) 217, 422, 825; (39) 22, 116, 327, 421, 427, 436; (40) 218, 723, 733, 735.
- fertilizing value, (29) 224; (32) 216; (37) 214.
- flower midge, control, (39) 563.
- flowering habits and anatomical structure, (37) 535.
- for irrigated pastures, (38) 337.
- for summer silage, (29) 473.
- fungicidal treatment, (29) 326.
- germination—
 - as affected by fertilizers, (29) 327.
 - of hard seeds, (27) 841.
 - studies, (32) 231.
- graphic summary of seasonal work, (39) 495.
- ground, analyses, (26) 768, 873.
- ground, examination and standardization, (29) 462.
- growth and nitrogen-fixing power on acid soils, (36) 514.
- growth as affected by—
 - fertilizer salts, (29) 329.
 - radioactivity, (28) 731.
 - sulphur, (32) 724.
- growth in relation to soil activity, (35) 516, 529.
- growth on volcanic ash, (29) 726; (32) 36.
- hay—
 - amylolytic activity, (32) 503.
 - analyses, (27) 170; (33) 469; (34) 164.
 - as affected by long storage, (32) 363.
 - ash analyses, (29) 861.
 - composition and nutritive value, (39) 166.
 - digestibility, (28) 363, 464; (32) 69, 363.
 - effect on bacterial activity of soils, (35) 216.
 - effect on fetal development, (33) 266.
 - energy value, (33) 72; (36) 469.
 - fertilizing value, (31) 822.
 - for milk production, (40) 572.
 - loader for, (39) 231.
 - manurial value, (40) 127.
 - production in United Kingdom, (26) 793.
 - v. shelled corn for sheep, (29) 572.
 - worm, notes, (29) 252; (30) 854.
- histological identification, (30) 631.
- hop, as pasture crop, (39) 231.
- in dry-farm rotations, (39) 131.
- inoculation, (29) 326.
- inoculation experiments, (27) 335; (28) 426.
- insects affecting, (31) 848; (34) 251; (38) 557; (39) 262, 264, 358, 532, 557, 565; (40) 163, 630.
- irrigation experiments, (32) 186, 225; (36) 35; (37) 639.
- Japan—
 - analyses, (26) 234.
 - as cover crop, (38) 346.
 - as pasture crop, (37) 533.
 - culture, (30) 335; (32) 527.
 - for cut-over land pasture, (39) 231.
 - hay, feeding value, (39) 269.
 - papers on, (26) 234.
 - purity and germination tests, (35) 441.
- leaf beetle, notes, (39) 358.
- leaf spot, notes, (32) 443.
- leaf tyer, identification, (36) 97.
- leaf tyer, studies, (35) 553.
- leaf weevil—*see also* Clover weevil.
 - control, (39) 264.
 - lesser, notes, (37) 255.
 - notes, (27) 259, 561; (31) 457; (37) 262.
- leafhopper, remedies, (35) 465.
- liming experiments, (28) 136; (31) 820; (32) 31; (33) 333; (34) 133; (38) 219; (39) 221, 421; (40) 322, 815.
- Maltese, as a forage crop, (32) 41.
- mammoth, as winter cover crop, (40) 133.
- management in corn belt rotation, (29) 140.
- meal, analyses, (36) 667; (38) 369.
- meal for pigs, (34) 869.
- Mexican, analyses, (34) 767.
- Mexican, culture, (30) 335.
- mite, notes, (27) 662; (28) 457; (35) 656; (38) 365.
- mite, review of literature, (31) 159.
- mixtures, tests, (39) 135.
- multiple leaves in, (35) 329.

Clover—Continued.

- nectar secretion, (37) 633.
- nematodes affecting, (29) 151, 446.
- nitrogenous fertilizers for, (37) 133.
- nodule bacteria of, (32) 33, 327.
- notes, (26) 362.
- nurse crops for, (39) 436.
- on bog and moss soils, (40) 212.
- pasture for pigs, (37) 270.
- pasture, notes, (30) 829.
- pollen, physiology of, (29) 829.
- pollination, (31) 134.
- pollination studies, (37) 30, 735.
- potash fertilizers for, (26) 526.
- potash requirement, (33) 517.
- precipitin test for, (31) 733.
- Pseudopeziza leaf spots, (37) 751.
- rate of seeding tests, (27) 836.
- red—
 - analyses, (26) 770; (27) 35; (32) 171.
 - anthracnose of, (34) 155.
 - as affected by potash, (32) 228.
 - as green manure, (28) 339; (35) 337; (39) 816.
 - as meadow crop, (40) 136.
 - behavior in acid soils, (37) 422.
 - breeding experiments, (32) 431; (33) 131; (34) 34; (40) 735.
 - changes during ensiling, (39) 166.
 - color characteristics in, (31) 330.
 - composition at different stages, (30) 634.
 - culture, (30) 335.
 - culture experiments, (27) 735; (28) 231; (29) 226; (32) 36, 431; (34) 34; (36) 435; (38) 334; (40) 328, 526.
 - decomposition in soil, (40) 214.
 - disease of, (33) 445.
 - disease resistance, (39) 454.
 - effect on *Azotobacter*, (40) 618.
 - effect on following crop, (38) 337; (40) 623.
 - fertilizer experiments, (34) 622; (35) 520; (39) 116.
 - floral development, (30) 132.
 - gall gnat affecting, (30) 159.
 - germination tests, (27) 431.
 - greensand potash for, (40) 423.
 - growing with grain, (40) 822.
 - improvement, (27) 136; (28) 434.
 - in rotation with cereals, (39) 127.
 - inoculation, (40) 328.
 - insects affecting, (40) 650.
 - irrigation experiments, (37) 435.
 - leaf-spot disease, (40) 156.
 - liming, (40) 328.
 - liming experiments, (32) 132; (34) 133, 725; (39) 127, 626.
 - nectary of, (33) 27.
 - notes, (31) 830.
 - nurse crops, (40) 329.
 - on inoculated soil, (39) 519.
 - pollination by bumblebees, (27) 359.
 - pollination studies, (33) 832.
 - propagation experiments, (31) 228.
 - relation of tops to roots, (31) 733.
 - relative yielding capacity, (40) 625.
 - root system, (32) 634.
 - seed, adulteration and misbranding, (27) 141.
 - seed color in, (29) 533.
 - seed of, and its impurities, (40) 627.
 - seed production, (40) 730.
 - seeding, (27) 337; (29) 634.
 - seeding experiments, (32) 531.
 - spider attacking, (39) 65.
 - sulphur requirement, (40) 727.
 - Uromyces fallens* on, (39) 550.
 - v. alfalfa, (40) 328.
 - variation in, (31) 134.
 - varieties, (26) 733; (29) 139; (30) 634; (33) 33.
 - yield as affected by source of seed, (26) 833.
 - yields, (40) 732.
- relation to climate, (28) 27.
- residues, nitrogen content, (28) 217.
- resistance to *Colletotrichum*, (38) 350.
- rhizoctonia, notes, (26) 844.
- root borer, notes, (31) 848.
- root borer, popular article, (39) 565.
- root curculio affecting alfalfa, (32) 851.
- rotation experiments, (29) 227; (33) 828; (36) 829.
- rust, aestival stage, (37) 752.
- rye stalk disease affecting, (26) 546.

Clover—Continued.

Sclerotinia libertiana affecting, (26) 647.

Sclerotium disease, (39) 753.

seed—

analyses, (26) 739.

boiling, (37) 829.

bushel weights, (37) 889.

caterpillar, notes, (32) 651; (39) 557.

seed chalcis fly—

notes, (26) 452; (28) 653; (29) 252; (32) 454;

(35) 551; (39) 557; (40) 853.

parasites of, (40) 862.

remedies, (32) 550; (39) 760.

seed—

cleaning, (40) 40.

coat, (26) 132; (33) 428.

determination of origin, (37) 541.

dry and soaked, measurement, (36) 339.

seed, germination—

and purity tests, (29) 741; (30) 40; (36) 638.

energy of, (29) 538.

tests, (26) 44; (29) 740; (34) 143.

seed—

hard, germination, (30) 738; (31) 228.

hard, treatment in hulling, (33) 334.

high v. low grade, (26) 838.

impermeable, viability, (35) 740.

imported, germination tests, (35) 140.

inspection, (31) 438; (36) 442.

investigations, (40) 39.

longevity, (32) 634.

midge, *see* *Dasyneura leguminicola*.

mixtures, tests, (26) 630.

production, (38) 441; (39) 835.

production in Europe, (26) 436.

production in Idaho, (38) 231.

purity tests, (27) 733.

scarifying experiments, (37) 30.

standards in Canada, (26) 839.

tests, (27) 142.

treatment with sulphuric acid, (27) 37, 524.

valuation, (30) 40; (36) 638.

viability as affected by age, (31) 624.

vitality, (27) 740.

seedling experiments, (38) 130; (39) 436, 437.

seedling on ranges, (30) 35.

selection and breeding, (31) 829.

serpentine leaf miner affecting, (29) 857.

sickness, notes, (28) 847; (32) 544.

sickness, studies, (36) 348.

silage—

acidity, (39) 878.

analyses, (29) 270; (32) 465.

and hay for dairy cows, (31) 673.

composition and nutritive value, (39) 166.

for dairy cows, (37) 75.

studies, (39) 166, 310.

snout beetle, notes, (32) 650.

sour, as a cover crop for citrus, (34) 344.

sowing with and without a nurse crop, (26) 434.

stem borer, notes, (35) 657.

stem rot, investigations, (38) 850.

stem rot, studies, (34) 541.

strawberry—

culture experiments, (30) 632.

introduction into Victoria, (26) 833.

streak disease, notes, (29) 352.

sulphur in, (31) 817.

sweet, *see* Sweet clover.

toxic effect—

of iron and aluminum salts, (33) 328.

on pigs, (38) 589.

transpiration, (39) 517.

utilization of sugar by, (36) 125.

utilization test, (39) 436.

v. alfalfa for milch cows, (39) 578.

v. alfalfa in rotation, (29) 634.

varieties, (26) 631; (27) 32, 334, 836; (29) 830;

(30) 828; (31) 829; (32) 36; (33) 632; (34) 736;

(38) 131, 433, 634.

varieties for Texas, (40) 729.

varieties, foreign, (39) 338.

variety tests, (40) 735.

vitamin content, (40) 564.

water requirement, (26) 129; (32) 127.

weevil in Iowa, (37) 262.

weevil, notes, (28) 752.

weevil pupa cells, notes, (30) 655.

Clover—Continued.

white—

analyses, (27) 35.

as meadow crop, (40) 136.

culture, (30) 335.

Dutch, culture experiments, (32) 431.

for irrigated pastures, (40) 432.

history in United States, (36) 529.

honey production, (40) 65.

hydrocyanic acid in, (28) 36; (30) 36.

new species resembling, (26) 40.

root systems of, (35) 639.

variation in, (29) 321.

varieties, (29) 139.

variety tests, (39) 530; (40) 232.

wild v. ordinary seeds, (38) 338.

yield as affected by origin of seed, (28) 432.

wilt disease, description, (36) 47.

winterkilling, (35) 530; (40) 331.

worm, green, (39) 865.

yield as affected by windbreaks, (28) 40.

Cloves—

as affected by storage, (36) 562.

effect on microorganisms, (35) 557.

examination, (32) 161.

germicide effect, (36) 863.

insecticidal value, (39) 762.

leaf spot disease, (36) 348.

powdered, adulteration, detection, (30) 415.

preservative value, (38) 469.

Club root—*see also* Cabbage and Turnip club root.

notes, (35) 150.

studies, (31) 642; (33) 52; (37) 454.

treatment, (35) 48, 245.

Club work—*see also* Boys' clubs and Girls' clubs.

in Indiana, (34) 599.

Clubs, neighborhood improvement, (28) 194; (29) 95.

Cluster fly, studies, (37) 665.

Clysia ambigua—

monograph, (34) 553.

notes, (31) 157.

Clytrinae, catalogue, (36) 458.

Clytus devastator in Florida, (40) 169.

Cnaphalocrocis medialis, notes, (33) 856.

Cnaphalodes, studies, (40) 262.

Cnemidocoptes mutans, notes, (35) 183.

Coagulase in alfalfa, (32) 411.

Coal—

analyses, (31) 359.

ash from iron industry, fertilizing value, (34) 725.

ash, potash content, (39) 329.

ashes, fertilizing value, (39) 430.

lignite, analyses, (30) 697.

mine disasters v. weather, (32) 25.

mining in North Dakota, (33) 683.

prices in United States, (31) 558.

smoke, effect on health, (27) 212.

spontaneous combustion, (37) 788.

tar as coating for concrete, (34) 889.

as wood preservative, (28) 344.

colors, use in food products, (26) 609.

creosotes as wood preservatives, (32) 841.

disinfectants, toxicity, (38) 284.

dust, effect on plants, (28) 129.

dye mixtures, review of literature, (32) 297.

dyes, effect on health, (36) 262.

dyes, methods of analysis, (27) 205.

dyes, notes, (27) 64.

dyes, separation, (26) 506; (36) 714; (38) 12.

injury to vegetation, (32) 826.

preparation, use on moor soil, (39) 438.

vapors, effect on vegetation, (27) 635; (29) 530; (30) 647.

waste as a source of ammonia, (27) 623.

wetting for domestic use, (38) 87.

Coast erosion, Spartina for, (40) 530.

Cob meal, analyses, (27) 774, 872; (29) 666; (30) 68;

(31) 366.

Cobaea scandens, flower development in, (31) 427;

(33) 427.

Cobalt—

chlorid, effect on olives, (26) 825.

in soils, (31) 720.

salts, effect on plant growth, (28) 38.

toxic effect on plants, (38) 628.

Cobra venom, hemolysis by, (36) 276.

- Coca cola**—
adulteration and misbranding, (27) 365.
sirup, analyses, (27) 167.
- Cocainae hydrochloridum**, nature and use, (26) 580.
- Cocaine**—
determination in beverages, (27) 499.
effect on coagulation of blood, (37) 177.
effect on germination of wheat, (27) 220.
separation and identification, (27) 208.
- Coccaceae**—
bibliography and classification, (34) 477.
in American Museum of Natural History, (29) 676.
nomenclature and classification, (39) 124.
- Coccid enemies of grapes in Hungary**, (38) 464.
- Coccidae**—*see also* Scale insects.
catalogue, (28) 754.
fungus parasites of, (28) 60.
injurious to citrus fruits, remedies, (31) 550.
insect parasites, (40) 651.
leaf feeding, on pines, (36) 459.
monograph, (35) 256.
morphology and physiology, (36) 655.
new, catalogue, (33) 748.
new chalcidoid parasites, (37) 467.
notes, (26) 149; (28) 754.
of Argentina, (26) 247.
Barbados, (36) 252.
California, (29) 158.
Cuba, (40) 355.
Florida, (38) 562.
Great Britain, (34) 552.
greenhouses, (39) 762.
Indiana, (35) 461.
Japan, (31) 157.
Kansas, (39) 255.
Louisiana, (26) 859.
New Jersey greenhouses, (35) 256.
New York, (34) 752.
Peru, (33) 254.
Philippines, (34) 552; (38) 404.
Porto Rico, (37) 158.
Samoa, (35) 358.
Uganda, (39) 560.
West Africa, (34) 851.
parasites of, (29) 253.
preparation for microscopical study, (32) 57.
remedies, (27) 357.
treatise, (28) 556.
- Coccidencyrus ensifer**, notes, (35) 263.
- Coccidia**—
chromosome cycle, (34) 458.
in sparrows, relation to blackhead in turkeys, (37) 384.
notes, (27) 181.
of intestines of birds, (37) 280.
- Coccidian dysentery of cattle**, (40) 290.
- Coccidiasus legeri** n.g. and n.sp., notes, (29) 759.
- Coccidioides immitis**, studies, (40) 83.
- Coccidiosis**—
avian, studies, (26) 187.
in calves, (26) 483; (38) 183; (40) 185.
in cattle, (30) 679.
in cattle—
and carabaos, (33) 482; (35) 76, 282.
intestinal, (39) 686.
studies, (26) 678.
treatment, (29) 676.
in chicks, (37) 182.
dogs, (37) 280; (39) 392.
goats, (30) 680; (35) 488.
poultry and game birds, (26) 483, 588; (32) 784.
poultry in South Africa, (38) 83.
poultry, treatment, (29) 889.
rabbits, (32) 180.
sheep, (35) 488.
- Coccidium**—
avium, notes, (27) 760.
bovis, studies, (26) 483.
- Coccidoctonus trinidadensis** n.g. and n.sp., description, (30) 59.
- Coccidoxenus portoricensis** n.sp., description, (30) 661.
- Coccids**—
in Seychelles, (30) 252.
introduced, in South Africa, (39) 560.
on coffee in India, (40) 651.
- Coccinella**—
9-notata, negative geotropism of, (30) 357.
9-notata, notes, (27) 561.
septempunctata, parasite of, (39) 868.
spp., destructive to citrus plant lice, (26) 755.
spp., life history, (33) 562.
spp., notes, (27) 656.
spp., studies, (29) 355; (39) 663.
- Coccinellidae**—
aphid feeding, studies, (34) 555.
biology, (30) 754.
of California, life history and feeding records (37) 58.
of Oregon, (30) 357.
of Philippines, (29) 657.
- Coccinellids**—
beneficial, in Piedmont, Italy, (28) 757.
larvae in U. S. National Museum, (36) 658.
parasitic on black scale, (26) 556.
statistics, (33) 256.
- Coccobacillus**—
acridiorum—
description, (31) 752.
destruction of locusts by, (31) 752, 753; (33) 154; (34) 854; (36) 356, 755; (37) 461, 561, 760, 849; (39) 656, 863; (40) 164.
in Algeria, (33) 653.
inoculation experiments with, (35) 853.
n.sp., destructive to locusts, (27) 357.
notes, (29) 354; (30) 546; (35) 255.
relation to septicaemia in cockchafers, (30) 54.
cajae, notes, (29) 855.
cajae, pathogenicity, (30) 54.
erausquinii n.sp., description, (29) 757.
infections of insects, (30) 53, 54, 551.
liquefaciens n.sp., description, (26) 581.
mycoides peripneumoniae, notes, (27) 184.
- Coccomyces**—
from Prunus, inoculation tests, (39) 456.
hiemalis n.sp., description, (29) 349.
hiemalis, studies, (36) 149; (37) 755.
kerriae n.sp., description and studies, (39) 253.
pini, notes, (29) 851.
spp., investigations, (33) 347.
- Cocophagus**—
acanthosceles n.sp., description, (37) 162.
aleurodici n.sp., description, (36) 555.
javis n.sp., description, (37) 59.
lecanii, notes, (26) 152.
lunulatus, parasitic on orange scale, (26) 554.
n.sp., notes, (27) 556.
n.spp., descriptions, (34) 557.
spp., notes, (29) 654.
- Coccotypes dactyliperda**, notes, (33) 750.
- Coccus**—
citridis, notes, (31) 58.
citricola—
and C. hesperidum, comparison, (37) 563.
fumigation, (39) 463.
n.sp., description, (32) 57.
notes, (34) 255.
remedies, (36) 357; (40) 454.
studies, (33) 558.
hesperidum, *see* Scale, soft.
lacca industry in India, (40) 550.
mangiferae, fungus parasite of, (27) 358.
spp. destroying prickly pear, (39) 559.
viridis, notes, (38) 864.
viridis, remedies, (26) 534.
- Cochineal**—
insect, cottony, notes, (28) 451.
insects, as pests, (39) 559.
- Cochliomyia** (Chrysomyia) macellaria, notes, (34) 756.
- Cochylis**—
ambigua—
biology and control, (33) 555; (34) 654.
control, (34) 63; (35) 253; (38) 257; (39) 765.
life history and control, (29) 655.
monograph, (34) 553.
notes, (26) 655; (28) 559; (35) 54, 257.
parasites of, (35) 659.
polyphagous habits, (32) 554.
school chart of, (31) 395.
- moth**—
biology and control (27) 758.
control, (26) 758; (30) 550.
control in Switzerland, (38) 159.
destruction by heat, (27) 856; (28) 752; (34) 653.

Cochylis—Continued.

moth—continued.

notes, (26) 56, 57; (28) 160; (34) 851; (36) 460.
studies, (36) 355.

Cockchafer—

bacillary septicemia of, (30) 53, 54.
bacterial diseases of, (38) 162.
biology, (27) 661.
control, (37) 467.
destruction, (27) 661, 662.
small green, life history, (28) 757.

Cockerels—

as affected by time of hatching, (39) 780.
fattening test, (37) 268.
feeding experiments, (36) 70.
feeding for market, (35) 273.
feminization, (34) 870; (38) 275.
raising for broilers, (39) 577.

Cockle, eradication, (27) 733.

Cocklebur, water requirement, (32) 127.

Cockroaches—

American, as carriers of cholera vibrios, (31) 752.
as blister rust carriers, (39) 248.
as pest of greenhouses, (39) 761.
Australian, as cotton pest, (32) 348.
bacteriology of, (26) 347.
control, (33) 59; (35) 899; (36) 457; (39) 762; (40) 353.
destruction, (38) 558.
notes, (37) 156.
of North America, (38) 258.
of Nova Scotia, (40) 856.
oriental, remedies, (28) 157.
parasite of, (40) 854.
physiology of digestion, (38) 558.
relation to cancer in rats, (32) 353.
role in milk infection, (26) 674.
trap for, (29) 653.

Cockshin grass, analyses, (30) 565.

Coco cake and meal, analyses, (33) 870.

Cocoa—

alkali treatment, (39) 314, 415.
alkalinity, (37) 414.
alkaloids in, (31) 358.
analyses, (26) 506; (28) 461; (32) 298; (35) 558.
and chocolate, treatise, (26) 662, 710.
copper in, (28) 862.
determining salt content, (27) 809; (39) 612.
digestibility, (30) 862.
effect on gastric secretion, (26) 466.
examination, (26) 659; (29) 361; (31) 760.
fat content, determination, (40) 206.
imports into United States, (34) 43.
industry, papers on, (39) 846.
manufacture, (30) 258.
manufacture, progress in, (32) 23.
methods of analysis, (27) 207.
microscopic examination, (36) 506.
production and trade, (26) 642.
siftings, analyses, (30) 868.
teas, analyses, (39) 612.
valorization, (26) 642.
value in the diet, (29) 664.

Cocoe diseases, notes, (29) 345.

Coconut—

beetle—*see also* *Oryctes rhinoceros*.
control by lemurs, (39) 565.
control in Seychelles, (33) 555.
notes, (29) 858; (30) 660; (37) 54.
studies, (38) 163.
bleeding disease, notes, (37) 349.
bleeding disease, treatment, (40) 845.
borer, notes, (30) 359.
bud rot—
causative agent, (26) 145.
description and treatment, (32) 149.
notes, (27) 251, 353, 751, 847; (34) 50, 643;
(36) 47, 846; (37) 252, 453, 839; (38) 553;
(39) 458, 459, 849; (40) 155, 750, 751.
studies, (26) 649; (28) 241; (35) 353, 850.
treatment, (33) 150.
butter, digestibility, (36) 860.
butter for tuberculous patients, (32) 63.
butterfly, notes, (35) 358.
cake—*see also* Copra cake.
acidity, (35) 770.
agglutinating properties, (31) 774.
analyses, (26) 165, 266, 267, 363, 770; (27) 371,
570, 872; (29) 467; (30) 268, 467; (31) 864;
(33) 665; (34) 263; (38) 771.

Coconut—Continued.

cake—continued.

composition and digestibility, (33) 568.
effect on composition of milk fat, (26) 170.
effect on milk and butter, (34) 570.
feeding value, (38) 572, 771.
for milch cows, (28) 174.
for steers, (29) 272; (35) 271.
sugar content, (37) 208.

disease—

in New Caledonia, (34) 55.
in New Hebrides, (34) 56.
notes, (29) 650.

diseases—

in Dutch East Indies, (38) 354.
Jamaica, (35) 458; (38) 758.
Malay states, (38) 446, 460, 758.
Philippines, (38) 459.
West Indies, (37) 452.

notes, (26) 60, 642, 744; (27) 357, 857; (28) 545;
(29) 345; (30) 652, 746; (32) 754; (34) 241,
348, 442, 740; (36) 46; (39) 453, 458, 752.
treatment, (26) 145; (29) 749.

fat, detection in butter, (28) 809; (29) 810; (33) 505.

detection in butter and lard, (27) 716.

determination in butter, (31) 810.

determination in edible fats, (26) 713.

iodin number, (27) 615.

globulin, studies, (40) 502.

industry in Philippines, (29) 340.

industry in Seychelles Islands, (31) 639.

leaf-miner beetle, notes, (30) 56.

leaf roller, in Hawaii, (34) 59.

meal—

analyses, (29) 367; (30) 268; (31) 864; (33) 568; (34) 665; (35) 562, 867; (36) 167, 268,
667; (37) 268; (38) 369; (39) 167, 270, 370;
(40) 72, 571, 665.

analyses and feeding value, (39) 676.

and cake, analyses, (40) 571.

composition and digestibility, (32) 68.

digestibility, (31) 766.

feeding value, (40) 672.

v. cottonseed meal for cows, (30) 176.

milk, osmotic pressure, (28) 262.

oil, accessory growth substance in, (38) 265.

acid content, (26) 114.

detection, (27) 207; (29) 613.

detection in butter, (26) 170, 610; (32) 508.

determination, (37) 618.

determination in margarin, (28) 208.

determination in mixtures, (38) 413.

digestibility, (36) 860.

digestion and absorption, (34) 257.

extraction in Philippines, (37) 806.

fatty acids, feeding value, (39) 271.

industry in Philippines, (38) 807.

industry, statistics, (39) 9.

measuring rancidity, (39) 108.

methods of analysis, (28) 810.

of high ioc in numbers, (26) 611.

physical constants, (35) 312.

production, (39) 108.

production in United States, (40) 614.

refractive index, (27) 615.

specific heat, (40) 68.

pests and diseases, (32) 754.

pests, notes, (26) 337; (27) 857.

poonac, analyses, (37) 814.

products—

as a substitute for butter, (36) 466.

examination, (36) 319.

preparation, (32) 46.

studies, (39) 107, 108.

red weevil in Ceylon, (38) 62.

root disease, notes, (40) 48, 155.

sap, studies, (30) 16.

scale affecting bananas, (30) 157.

scale, notes, (27) 756; (29) 858.

toddy in Ceylon, (36) 466.

tree caterpillar in Panama, (38) 58.

weevil, notes, (29) 653.

white fly, notes, (27) 455.

Coconuts—

abnormalities of, (34) 236; (35) 250.

changes in during ripening, (31) 535.

cover crops for, (34) 736.

culture, (26) 139; (28) 840; (34) 439; (37) 345; (38) 446, 542.

Coconuts—Continued.

- culture—
 - and plantation machinery, (40) 247.
 - and uses, (33) 438; (39) 646.
 - experiments, (29) 637; (37) 144; (40) 339.
 - handbook, (39) 449.
 - in Burma, (31) 48.
 - Ceylon, (32) 46.
 - Guiana, (31) 391.
 - India, (32) 131.
 - Philippines, (26) 336, 743.
 - West Indies, (26) 642.
 - destruction by rats, (26) 857.
 - fertilizer experiments, (29) 637, 746; (30) 644; (31) 421, 635, 742; (32) 236; (33) 535; (34) 344; (35) 344; (36) 340; (38) 144, 748; (40) 44.
 - flower biology, (39) 244.
 - food value, (40) 173.
 - for pigs, (37) 768.
 - germinating, (35) 344.
 - germinating, lipase in, (33) 426.
 - grated, for chicks, (37) 768.
 - handbook, (29) 840; (36) 445.
 - in Samoa, beetle affecting, (26) 151.
 - injury from lightning, (35) 250.
 - insects affecting, (26) 354, 642; (27) 357, 453, 857; (28) 249; (29) 53; (30) 752; (31) 58; (33) 154, 555; (34) 349, 652, 740, 853; (35) 55; (38) 157, 446, 459, 460; (39) 159, 458, 557; (40) 259, 260.
 - leaf-bitten phenomena, (40) 751.
 - macapuno, description, (31) 536.
 - nut fall and leaf droop, (39) 552.
 - on clay soil, oil content, (39) 544.
 - origin and dispersal, (37) 545.
 - planting with Hevea, (39) 246.
 - recipes, (28) 660.
 - ripening, chemical changes in, (34) 344.
 - salt as a fertilizer for, (32) 324.
 - selection experiments, (35) 344.
 - spraying experiments, (34) 50.
 - stored, diseases of, (33) 545.
 - treatise, (27) 146; (32) 236, 339.
- Cocos nucifera—
- culture, (26) 139.
 - treatise, (27) 146.
- Cod liver—
- meal, composition and feeding value, (34) 873.
- oil—
- and its cordials, nutritive values, (33) 163.
 - biochemistry, (36) 262.
 - condiment, analyses, (27) 670.
 - effect on growth, (31) 560.
 - for calves, (29) 170, 668; (30) 671.
 - lecithids in, (33) 166.
 - refractive index, (27) 614.
 - therapeutic action, (28) 262.
- Codfish—
- creamed, ptomaine poisoning from, (35) 367.
 - dried, nitrogenous constituents of, (30) 861.
 - nutritive value, (40) 66.
- Codiaeum flowers, sexual variations in, (36) 130.
- Codling moth—
- biology, (30) 754.
 - bird enemies, (27) 559.
 - Calliephialtes parasite of, (30) 360.
 - clerid enemy of, (31) 353.
 - control, (26) 136, 146, 349, 860; (27) 356, 358, 862; (28) 57, 59, 60, 156, 158, 558, 659, 857; (29) 456, 558; (30) 656, 754, 852; (31) 252, 335, 439, 454, 551; (33) 59, 141, 252; (34) 64, 147, 231, 738; (35) 253, 342, 551; (36) 855, 856; (37) 54, 57, 242, 259; (38) 540, 653, 857; (39) 348, 865, 866; (40) 162, 647.
 - egg parasite of, (26) 252, 557; (32) 59.
 - egg parasites in Turkestan, (34) 358.
 - eggs, destruction by nicotin sulphate, (38) 860.
 - false, notes, (31) 752.
 - habits, (35) 659.
 - hymenopterous parasites, (36) 53.
 - in apple orchards, (26) 541.
 - Maryland, (38) 154.
 - Nova Scotia, (35) 853.
 - Russia, (33) 155.
 - Russian Turkestan, (30) 755.
 - irregular emergence, (39) 262.
 - larvae, resistance to cold, (37) 356.
 - larvae, spraying, (39) 345.
 - life history, (28) 60, 558; (30) 359; (33) 559; (34) 251; (35) 253; (36) 756, 853; (38) 653; (40) 300.
 - morphology and biology, (33) 748.
 - new, attacking persimmon, (40) 52, 167.

Codling moth—Continued.

- nine-year band record, (39) 765.
 - notes, (26) 753, 757; (27) 53, 453, 755; (28) 160; (29) 158, 353, 453; (30) 755; (31) 548, 848; (32) 250; (33) 652, 653; (36) 456; (37) 460; (40) 161, 648, 753, 756.
 - parasites of (26) 458.
 - parasitic and predaceous enemies of, (29) 158.
 - relation to climate, (28) 415.
 - studies, (30) 549; (32) 654; (33) 61; (35) 252, 257; (36) 753; (37) 57, 463; (38) 361.
 - summary of information, (39) 262.
 - tachinid parasites of, (34) 652.
 - trap, description, (36) 858.
 - variety on walnuts, (40) 457.
- Coelalysia glossinophaga n.sp., description, (39) 566.
- Coeliniidae—
- ferruginea n.sp., description, (31) 355.
 - meromyzae, biology, (38) 566.
- Coeliodes fuliginosus on poppies, (39) 663.
- Coelodiazesis plumbeus, notes, (35) 759.
- Coeloides brunneri n.sp., description, (29) 562.
- Coelophora spp., life histories, (29) 253.
- Coelopisthis nematocida, parasitic on large larch sawfly, (26) 353.
- Coelopisthoidea—
- cladiae n.g. and n.sp., notes, (29) 359.
 - notes, (36) 556.
- Coelosterna scabrata—
- description, (28) 753.
 - notes, (27) 863.
- Coenurus serialis in rabbits, (32) 180.
- Coffea—
- amara, studies, (34) 344.
 - arabica—
 - culture experiments, (29) 641.
 - longicorn beetle affecting, (29) 857.
- Coffee—
- abnormal growths, (40) 249.
 - adulteration, (28) 862.
 - adulteration, detection, (31) 208.
 - adulteration in Philippines, (31) 259.
 - alkaloids in, (31) 358.
 - analyses, (27) 63; (31) 760, 856; (32) 856; (35) 558.
 - and coffee substitutes, examination, (32) 762.
 - anthracnose, treatment, (36) 846.
 - alfalfa, notes, (37) 662.
 - artificial coloration, (27) 809.
 - as affected by storage, (34) 661; (36) 562.
 - bark beetles affecting, (30) 660.
 - bean weevil, notes, (26) 354; (27) 155, 657.
 - bean weevil, studies, (38) 564.
 - beans, fatty oil and wax of, (29) 811.
 - beans, removing shell before planting, (28) 743.
 - berry, composition, (32) 838.
 - berry, host plant of fruit fly, (26) 758.
 - biometric studies, (30) 534; (31) 142; (32) 440.
 - black rot, treatment, (38) 351.
 - borer, orange-yellow, notes, (26) 253.
 - borer, yellow-headed, notes, (31) 61.
 - botanical studies, (34) 535.
 - "brusca," description and bibliography, (26) 450.
 - caffeine content, determination, (40) 115.
 - caffeine-free, diuretic effect, (31) 461.
 - cake, analyses, (26) 363; (30) 67.
 - candelillo, studies, (31) 450.
 - cereal, composition, (26) 660.
 - chicory, studies, (28) 762.
 - chlorosis, notes and bibliography, (28) 153.
 - coating, (31) 658.
 - composition, (31) 165.
 - compound containing ivory nuts, analyses, (31) 759.
 - constituents, useful and harmful, (34) 166.
 - constituents, volatile, (31) 856.
 - consumption and modes of grinding in foreign countries, (32) 64.
 - culture, (27) 146; (33) 446, 542; (39) 449, 846.
 - culture—
 - and manuring, (29) 239.
 - and preparation for market, (36) 142.
 - experiments, (29) 641; (31) 637; (32) 746; (33) 536, 643; (35) 840; (36) 141; (37) 144; (38) 845; (40) 339.
 - in Belgian Kongo, (37) 545.
 - British East Africa, (38) 43.
 - Dutch East Indies, (30) 697.
 - Guiana, (31) 391.
 - India, (28) 736; (32) 131.

Coffee—Continued.

culture—continued.

- in Nyasaland, (26) 829.
- Philippines, (35) 353.
- Porto Rico, (28) 237.
- Salvador, (39) 846.
- South India, (33) 643.
- Uganda, treatise, (30) 741.
- Venezuela, (31) 637.
- relation to climatic conditions, (26) 810.
- under shade, (39) 449.

description of various kinds, (35) 111.

disease—

- description, (28) 651.
- description and treatment, (31) 152.
- in East Africa, (29) 831.

diseases—

- and pests, notes, (37) 545; (40) 252.
- in Dutch East Indies, (31) 540.
- in Surinam, (30) 750; (32) 749.
- in Uganda, (35) 45; (39) 146.
- notes, (26) 51; (27) 858; (28) 148, 443; (29) 345, 650; (31) 646; (32) 340, 645; (34) 540, 545, 744; (35) 850; (36) 746; (38) 51, 548; (39) 146, 152, 849, 857; (40) 48.
- studies, (33) 549.
- treatment, (36) 347.

drinking, effect on children, (27) 272.

effect on—

- body temperature, (26) 466.
- gastric secretion, (26) 466.
- heart, (27) 767.
- heart, kidneys, and nerves, (31) 265.

Excelsa, culture in Java, (36) 241.

fertilizer experiments, (27) 146; (29) 641; (30) 622; (31) 421, 637; (33) 536; (36) 343; (38) 749; (40) 43.

flowers, morphology and physiology, (27) 146.

food value, (31) 165.

formation of aromatic substances in, (29) 361.

fruit diseases, notes, (37) 838.

germination experiments, (33) 841.

grafting, (35) 344.

grains, changes in due to *Aspergillus*, (34) 545.

green manure crops for, (34) 344.

green manuring experiments (30) 741.

grounds, analyses, (38) 626.

harmfulness, method of lessening, (32) 161.

hybrids, notes, (34) 344.

imports into United States, (34) 43.

improvement, (28) 736.

improvement by selection, (29) 439.

industry—

- in Abyssinia, (37) 835.
- in French Indo-China, (37) 545.
- in Java, (35) 745; (36) 642.
- studies, (28) 438.

infusion, principles of, (26) 261.

infusions, analyses, (30) 762.

infusions, chemistry of, (31) 164.

ingestion, effect on uric acid excretion, (37) 470.

insects affecting, (26) 753; (27) 858; (28) 249, 555;

(29) 653; (30) 546; (32) 340, 847; (33) 153, 554;

(34) 349, 549; (35) 463; (37) 560; (38) 558, 857;

(39) 556, 656, 862.

layering, (34) 344.

leaf—

- blight, studies, (31) 450.
- disease in Porto Rico, (40) 42.
- disease in Uganda, (34) 848.
- disease, notes, (32) 548; (36) 347; (37) 551, 838.
- disease, treatment, (33) 445, 649; (37) 453; (38) 646.
- miner, notes, (29) 652, 856; (33) 554; (38) 558.
- rust, absence from Western Hemisphere, (39) 857.
- rust, studies, (40) 751.
- weevil, notes, (36) 354.

liming experiments, (40) 43.

making devices, efficiency, (34) 166.

making, studies, (30) 558, 762.

manuring in southern India, (32) 838.

Mautsaka, studies, (34) 344.

methods of analysis, (35) 111.

mulch, fertilizing value, (28) 223.

Murta, studies, (40) 42.

nematodes affecting, (26) 750; (34) 55.

notes, (31) 856.

of Dutch East Indies, treatise, (30) 43.

osmotic pressure, (28) 262.

Coffee—Continued.

- Pellicularia disease, (40) 48.
- phloem necrosis, (39) 152.
- plant, tolerance for salt, (27) 824.
- planting with Hevea, (39) 246, 751.
- pollination by bees, (26) 63.
- preparation, descriptions and analyses, (40) 268.
- prices of in India, (30) 896.
- production in Java, (27) 153.
- pulp, analyses and fertilizing value, (34) 726.
- pulp and composts, analyses, (28) 224.
- purifying and improving, (26) 261.
- quality as affected by fruit fly, (32) 746.
- resistance to native vegetation, (29) 340.
- roasted, gases evolved from, (29) 265.

Robusta—

- breeding experiments, (32) 236; (39) 244.
- culture in East Indies, (31) 638.
- culture in Java, (28) 641.
- Improvement, (30) 43.

root disease—

- in Lesser Antilles, (37) 454.

notes, (38) 547.

studies, (39) 752.

treatment, (31) 549.

root rot due to sterile mycelium, (39) 857.

scale insects affecting, (36) 354; (40) 651.

Sclerotium disease, (40) 252.

seed, germination tests, (27) 844; (29) 642.

selection and making, (32) 558.

selection experiments, (32) 746.

silver thread blight, studies, (29) 351, 552.

soils of Java, (38) 513.

soils of Porto Rico, (37) 43.

spraying experiments, (27) 847.

statistics in United States, (38) 894.

substitutes, (38) 266; (40) 508, 658, 864.

substitutes—

- analyses, (27) 63, 767; (35) 558.

description of various kinds, (35) 111.

examination, (30) 664.

methods of analysis, (35) 111.

tin poisoning from, (28) 565.

toxicity, (33) 66.

transplanting, (36) 342; (37) 649; (38) 749.

treatise, (29) 265.

value in the diet, (29) 664.

varieties, (28) 641; (33) 536; (36) 342; (37) 835;

(38) 749.

weevils, notes, (29) 652.

withertip, notes, (34) 55.

Cognac, *see* Brandy.

Cogon, notes, (26) 362.

Cohesion, review of literature, (35) 432.

Cohoba, studies, (36) 734.

Cohune nut oil, physical constants, (35) 312.

Coital exanthema in cattle, (31) 381.

Coix lachryma-jobi—

as food, (40) 658.

notes, (26) 361.

Coke—

as sewage filtering material, (28) 789.

manufacture from sewage sludge, (26) 624.

oven by-products, recovery, (28) 818.

oven tars of United States, (26) 591.

Colamin, isolation from oats, (31) 309.

Colaptes auratus luteus, coccidiosis in, (26) 187.

Colaspidea atra—

injurious to alfalfa, (33) 555.

notes, (28) 854.

remedies, (29) 561.

Colchicin—

detection, (26) 580.

detection in water, (34) 410.

Cold—*see also* Temperature, low.

chemical protection against, (35) 474.

effect on—

- cereals, (31) 541, 542.
- larvae of *Trichinella spiralis*, (30) 881.
- microorganisms, (38) 885.
- microorganisms in soils, (29) 316.
- milk, (28) 775.
- plants, (34) 223.
- trichinae, (34) 680.

frames—

- construction, (31) 393; (34) 494.
- construction and management, (28) 838;
- (32) 140, 834; (34) 40, 737; (35) 234, 445;
- (37) 41.
- preparation, (27) 393.

Cold—Continued.

- resistance in perennial plants, (30) 333.
- storage—
 - and prices, studies, (28) 871.
 - apparatus, tests, (27) 486.
 - bibliography, (36) 762.
 - construction, address on, (29) 770.
 - economic results, (27) 164.
- storage, effect on—
 - eggs, (29) 276.
 - fish, (31) 64, 459.
 - fresh beef, (36) 759.
 - fruit fly, (32) 450; (34) 554; (35) 362.
 - hops, (33) 709.
 - keeping quality of sugar, (37) 510.
 - lamb and mutton, (28) 366, 860.
 - milk and butter, (27) 376.
 - moisture content of butter, (31) 675.
 - olives, (29) 340.
 - price of eggs, (35) 589.
 - prices, (30) 295.
 - proteolytic enzymes, (27) 878; (29) 268
 - trichinae, (36) 680.
 - Trichinella spiralis*, (31) 356.
- storage—
 - experiments, (39) 344.
 - experiments with peaches, (28) 740.
 - experiments with strawberries, (31) 535.
 - house, description, (26) 336.
 - in Canada, (38) 392.
 - in the Tropics, (27) 460.
 - injury to fruits, studies, (29) 135.
 - insulation, testing, (27) 461.
 - its capabilities, (40) 864.
- storage law in—
 - California, (37) 63.
 - Massachusetts, (31) 67.
 - Nebraska, (31) 67.
 - New Jersey, (28) 862.
- storage—
 - notes, (29) 866.
 - of apples, (30) 41.
 - cheese, (27) 377.
 - eggs, (26) 369.
 - fish, (39) 165.
 - food, (39) 472.
 - food and food products, (27) 362.
 - fruits, (28) 591; (29) 745; (30) 640; (34) 637.
 - furs and fabrics, (27) 565.
 - grapes, (28) 437; (40) 149.
 - tropical fruits, (32) 439, 745.
 - vegetables, (30) 640; (34) 637.
 - on farms, (29) 88.
 - papers on, (30) 259.
- storage plants—
 - Government operation, (40) 688.
 - inspection in Kentucky, (31) 359.
 - inspection in Massachusetts, (33) 260.
 - inspection in Virginia, (29) 567.
- storage—
 - relation to food supply, (30) 559.
 - relation to fruit growing, (27) 441.
 - studies, (28) 868.
 - treatise, (33) 892.
 - warehouses, inspection in New Jersey, (32) 357.
- waves—
 - at Tampa, Florida, (37) 513.
 - cause, (33) 210.
 - forecasting, (35) 808.
 - in Florida, (38) 210.
- Colemania sphenarioides*, notes, (26) 347.
- Colemanite—
 - calcined, use against fly larvae, (31) 654.
 - effect on crops, (39) 429.
- Coleophora—
 - alcyonipennella*, notes, (27) 453.
 - caryaefoliella*, notes, (38) 762; (39) 557.
 - caryaefoliella*, studies, (38) 157.
 - fletcherella*, see *Cigar* case bearer.
 - fuscedinella*, notes, (40) 551.
 - laricella*, see *Larch* case bearer.
 - limospennella*, notes, (28) 158; (37) 255.
 - n.spp., descriptions, (34) 553.
 - sacramento, biology, (40) 757.
 - spp., notes, (31) 454.
 - volckei* n.spp., descriptions, (38) 862; (40) 652.

Coleoptera—

- catalogue, (26) 560; (27) 759; (28) 256; (30) 458; (35) 363.
- digestive ferments of, (26) 657.
- injuriously or beneficial to forests in India, (32) 351.
- of British India, (37) 765.
- British India, treatise, (29) 57.
- British Isles, treatise, (29) 355.
- Philippines, (36) 257.
- Quebec, (38) 461.
- West Indies, (34) 556; (39) 504.
- olfactory sense, (34) 254.
- parasites of, (39) 468.
- use in study of zoogeography, (27) 656.
- xylophagous, feeding habits, (26) 151.
- Coleosporiaceae—
 - monograph, (36) 647.
 - of Guatemala, (40) 327.
- Coleosporium—
 - campanulae, notes, (39) 549.
 - inconspicuum, notes, (31) 348.
 - n.spp., notes, (30) 537.
 - oldenlandiae*, description, (31) 145.
 - ribicola*, aecial stage, (37) 354.
 - solidaginis*—
 - spore germination, (38) 225.
 - studies, (38) 553.
 - wintering, (36) 647.
 - sonchi-arvensis* in Wisconsin, (30) 654.
 - spp., aecial stages, (37) 844, 845.
 - spp., hosts of, (31) 540.
 - spp., occurrence in Vermont, (38) 254.
 - spp. on pine, inoculation experiments, (32) 647.
 - vernoniae*, notes, (26) 340.
- Coleus—
 - blumei*, abscission in, (40) 325.
 - bud variations in, (32) 726.
 - hybridus, polarity, (34) 626.
 - somatic variations in, (37) 27.
- Coli bacillus*, see *Bacillus coli communis*.
- Colias* spp. injurious to alfalfa, (33) 555.
- Colibacillosis* in calves, (26) 381; (40) 887.
- Colic—
 - in horses, notes, (26) 684.
 - in horses, treatise, (32) 584.
 - treatment, manual, (31) 382.
- Colinus virginianus*, coccidiosis in, (26) 187.
- Collard—
 - and cabbage, crossing experiments, (31) 438.
 - diseases, notes, (37) 48.
- Collargol, effect on catalase, (26) 504.
- College—
 - curriculum, change of stress in, (36) 393.
 - curriculum, relation to human life and work, (33) 895.
 - graduates, professional distribution, (28) 192.
- Colleges, see Agricultural colleges.
- Collegiate Country-Life Club—
 - for Rural Leadership, (29) 199.
 - of America, (31) 298.
- Collembola—
 - destructive to cattle ticks, (28) 758.
 - notes, (27) 656.
- Colletotrichum—
 - agaves—
 - description and treatment, (29) 346.
 - notes, (30) 845; (31) 641; (34) 442.
 - studies, (33) 851.
 - and *Gloeosporium* on chili, identity, (34) 50.
 - anthurii*, notes, (37) 550.
 - atramentarium*, notes, (36) 544.
 - cajni*, notes, (34) 52.
 - camelliae*—
 - notes, (37) 252; (38) 354, 355, 548.
 - studies, (33) 650.
 - treatment, (39) 752.
 - cereale, notes, (38) 147.
 - cinnamoni* n.sp., description, (37) 748.
 - circinans*, studies, (37) 841.
 - cliviae*, notes, (37) 353.
 - coffea* (?), notes, (37) 838.
- cradwickii*—
 - fungus resembling, (31) 645.
 - notes, (34) 349.
- falcatum*, notes, (26) 445; (29) 348, 647; (30) 541, 650; (31) 746; (32) 442; (33) 444; (34) 49, 841; (36) 541; (37) 452, 551, 553; (40) 47, 157.

Colletotrichum—Continued.

- falcatum, studies, (26) 548; (27) 48; (38) 851.
 - gloeosporioides—
 - effect on citrus fruits, (34) 354.
 - notes, (28) 749; (29) 243; (31) 152; (34) 241, 446, 644, 750; (35) 153; (36) 851; (37) 453; (40) 47.
 - relation to citrus gummosis, (29) 247.
 - studies, (30) 451.
 - treatment, (33) 149; (37) 352; (38) 455.
 - variations, (38) 252.
 - gossypii—
 - notes, (29) 548; (33) 741; (37) 452.
 - resistance of cotton to, (35) 348.
 - graminicolum n.n., studies, (31) 746.
 - heveae, notes, (37) 253.
 - higginscanum n.sp., description, (37) 754.
 - incarnatum, notes, (34) 540; (35) 45.
 - infection of wheat by, (26) 747.
 - lagenarium—
 - notes, (32) 641.
 - studies, (35) 652, 750; (36) 248; (40) 250.
 - lindemuthianum—
 - as affected by temperature, (32) 749; (34) 538.
 - notes, (26) 747; (29) 150; (31) 542; (34) 645; (37) 550; (39) 249.
 - resistance of beans to, (35) 348.
 - resistance to, (40) 645.
 - studies, (39) 455, 745.
 - treatment, (32) 843; (37) 248.
 - luxificum, notes, (26) 851; (29) 155.
 - lycopersici on tomatoes, (34) 53.
 - n.sp. on clover, (33) 346.
 - n.sp. on milk weed, (33) 350.
 - n.sp. on potatoes, (33) 346.
 - n.sp. on Schinus molle, (34) 242.
 - n.spp., descriptions, (32) 842.
 - neator, description, (26) 448; (27) 445.
 - nigrum, notes, (34) 442; (38) 547.
 - nigrum on pepper, (31) 542.
 - oligochaetum, notes, (26) 244.
 - on sugar cane, (40) 844.
 - schizanthi n.sp., description, (26) 56.
 - solanicum on eggplant, (38) 250.
 - sp. on coffee, (36) 846.
 - sp. on Licuala grandis, (36) 348.
 - sp. on snapdragon, (34) 841.
 - spp. as affected by temperature, (34) 542.
 - spp., notes, (26) 549, 649; (27) 250; (28) 444.
 - spp. on coffee, (38) 51.
 - spinaciae, studies, (32) 147.
 - theobromicolum, notes, (29) 548.
 - trifolii—
 - description and treatment, (39) 754.
 - notes, (28) 52.
 - perfect stage, (28) 746.
 - resistance to, (39) 454.
- Colloid—
dialyzing membranes, preparation, (38) 710.
germicide effect, (38) 752.
membranes for ultrafiltration and pressure dialysis, (35) 612.
- Colloid chemistry—
application to agriculture, (29) 408.
handbook, (40) 408.
in soils, geology, and mineralogy, (30) 513.
of Fehling's sugar test, (39) 14.
review of literature, (26) 307.
- Colloidal—
gels, water absorption and evaporation, (40) 27.
hypothesis of permeability, (40) 818.
metals, therapeutic value, (38) 585.
mixtures—
for studying protoplasmic action, (37) 325, 821.
imbibition in, (40) 29.
showing water relations of plants, construction, (40) 28.
swelling, (35) 822; (39) 731.
swelling, effect of bog and swamp waters on, (40) 520.
phenomena in pollen-tube protoplasm, (40) 28, 818.
properties of plant mucilage, (40) 818.
solutions, monograph, (37) 501.
solutions, treatise, (36) 108.
substances in soil solution, (28) 516.

Colloids—see also Biocolloids.

- as protective substances for bacteria, (31) 24.
 - chemistry of, (38) 309, 501, 708.
 - determination in clay and soils, (30) 807.
 - effect on electrical conductivity of salts, (37) 520.
 - effect on nitrogen fixation, (30) 431.
 - handbook, (34) 801.
 - in immunity, (32) 78.
 - in soils, (26) 819; (30) 718; (32) 311, 318, 813; (33) 118, 215, 513; (35) 512.
 - in soils—
 - adsorptive power, (32) 318.
 - as affected by soluble salts, (35) 622.
 - importance, (29) 817; (34) 816.
 - properties, (31) 514.
 - studies, (35) 819, 813.
 - treatise, (34) 515.
 - in water and sewage purification, (31) 616.
 - metallic, bactericidal properties, (32) 272.
 - movement through cell membranes, (28) 37.
 - movement through plasma membrane, (30) 28.
 - of clay, notes, (34) 816.
 - of humus, (33) 609.
 - physics and chemistry, (29) 608; (35) 501.
 - plant, studies, (30) 111.
 - precipitation by aluminum hydroxide, (30) 504.
 - relation to soil fertility, (28) 814.
 - significance in physiology, (38) 820.
 - soluble, determination in soils, (31) 801.
 - studies, (29) 201.
 - treatise, (27) 881; (32) 308; (33) 801.
- Collops—
bipunctatus, notes, (27) 561.
- vittatus, predacious on alfalfa caterpillar, (32) 58.
- Collybia—
albuminosa, growth on Odontotermes, (38) 849.
- velutipes, use as food and identification, (39) 571.

Collyria calcitrator, development, (34) 363.

Collyricium sp. in sparrows, (39) 760.

Colobogaster quadridentata, notes, (30) 454.

Colocasia—
blight, notes, (31) 52, 641.
- spp., analyses and culture, (31) 41.
- storage roots, (35) 750.

Colocasiaeae, varieties, (35) 134.

Colon-aerogenes organisms, culture medium for enumeration, (40) 381.

Colon—
bacilli—
from horse, cow, and man, (36) 379.
- human and equine, (35) 681.
- survival after pasteurization, (32) 775.
- typhoid intermediates in bird diseases, (40) 685.

Colonial science school in Germany, (27) 395.

Colonization—
Association of Republic of China, (28) 498.
- in the Punjab, (40) 595.

Colopha ulmicola, notes, (27) 658.

Colophony, methods of analysis, (27) 210.

Color—see also Pigmentation.

aleurone, inheritance in maize, (40) 436.

analysis, reagents used in, (36) 714.

characters, Mendelian, biochemistry, (30) 129.

constituents in higher plants and algae, (35) 333.

development in mammals and birds, (32) 766.

effect on radiation from soils, (29) 619.

in animals, chemistry of, (33) 667.

in plants, studies, (33) 224.

in relation to chemical constitution, (40) 505.

inheritance, (40) 665.

inheritance in—
animals, (38) 269, 574, 776.
- barley, (40) 825, 826.
- beans, (40) 536.
- cattle, (26) 366; (27) 771; (30) 469; (31) 266, 470; (40) 73, 367.
- Convolvulus, (40) 541.
- corn, (28) 331.
- field peas, (31) 333.
- guinea pigs, (26) 878; (27) 573; (30) 265, 266; (34) 464; (39) 877.
- horses, (27) 370, 467, 876; (30) 70, 373, 571; (31) 266, 870; (32) 361; (33) 471.
- jute, (27) 428.
- mammals, (37) 866; (40) 869.
- mice, (26) 472; (27) 769; (30) 264; (40) 275.
- oats, (40) 239.
- Phlox drummondii, (33) 644.
- pigeons, (31) 572; (40) 275.

Color—Continued.

- inheritance in—continued.
 - pigs, (30) 69; (31) 567; (32) 466.
 - pointer dogs, (31) 865.
 - rabbis, (28) 768; (33) 757; (34) 370, 466.
 - Rotundifolia grapes, (31) 637.
 - sorrel horses, (36) 270.
 - tobacco blossoms, (40) 442.
 - wheat, (40) 525.
- laboratory of Bureau of Chemistry, (40) 16.
- numerical expression for, (37) 110.
- production in iris flowers, (31) 626.
- relation to sex and fertility in guinea pigs, (30) 472.
- standards and colorimetric assays, (35) 204.
- standards in biology, book, (29) 762.
- tests, biochemical, studies, (40) 114.
- washes, notes, (27) 599.
- Colorado—
 - College, notes, (28) 494; (29) 96; (33) 99; (40) 900.
 - grass as a forage crop, (31) 829.
 - grass, notes, (29) 362.
 - River—
 - basin, hydrography, (32) 279.
 - basin, profile surveys, (36) 784.
 - control, (35) 679, 685.
 - silt determinations, (37) 486.
 - rubber plant or pingue, description, (39) 386.
 - Station—
 - financial statement, (26) 692; (27) 396.
 - notes, (27) 300; (28) 494; (29) 96; (33) 99.
 - report, (30) 197; (31) 694; (33) 96; (36) 693; (37) 599; (39) 397.
 - report of director, (26) 692; (27) 396.
- Colored solutions, acidimetry of, (39) 503.
- Colorimeter—
 - description, (35) 612.
 - dilution, description, (32) 20.
 - Duboscq, converting into nephelometer, (34) 503.
 - new form, (39) 503.
 - observations, source of error in, (34) 805.
- Colorimetric determination of organic substances, (40) 712.
- Colorimetry, new apparatus for, (37) 803.
- Coloring—
 - extracts, preparation, (30) 615.
 - matter, detection in—
 - edible fats, (31) 811.
 - fruit juices, (26) 608.
 - milk, (37) 113.
 - tea, (30) 207.
 - matter—
 - elimination by the udder, (30) 474.
 - photodynamically active, effect on plant cells and tissues, (34) 223.
 - plant, chemistry, (27) 310.
 - separation, (27) 497.
- Colors—
 - artificial, use in food products, (29) 661.
 - comparison, (32) 20.
 - effect on plants, (28) 36.
- Colostrum—
 - analyses, (26) 80; (38) 780.
 - as affected by parturition, (37) 172.
 - biochemistry, (27) 208.
 - bodies, biology, (32) 80.
 - catalytic activity, (29) 717.
 - cell content, (26) 370.
 - change into normal milk, (38) 780.
 - chemistry of, (31) 573.
 - detection, Schardinger reaction, (26) 211.
 - hemolytic power, (27) 208, 811.
 - human, antibody content, (29) 778.
 - investigations, (28) 18.
 - notes, (26) 161, 673.
 - proteins of, (37) 8.
 - toxic character in milk fever, (27) 185.
- Colpitis granulosa, causative agent, (26) 235.
- Colpitol, description, (30) 578.
- Colpoda cucullus—
 - bactericidal power, (27) 317.
 - prevalence in soils, (29) 622; (32) 619.
- Colt shows, directions for, (33) 697.
- Colts—
 - breaking and training, (33) 271.
 - draft, developing, (29) 773; (34) 175.
 - feed cost, (39) 163.
 - newborn, weakness in, (39) 187.
- Colt's foot brown leaf spot, studies, (26) 852.

- Columbia River, annual rise, (29) 812; (36) 19; (38) 511.
- Columbine—
 - culture in Alaska, (29) 743.
 - leaf miner, notes, (37) 255.
 - leaf miner, studies, (36) 57.
 - wilt disease, studies, (36) 251.
- Colymbus auritus, notes, (27) 355.
- Cola—
 - cakes—
 - adulteration, (26) 468.
 - effect on milk, (26) 477.
 - microscopic examination, (37) 416.
 - oil, determination in mixtures, (37) 312.
- Comandra umbellata, parasitism, (34) 242.
- Combretum spp., analyses and digestibility, (27) 871; (32) 167.
- Comedo hookeri n.sp., description, (30) 59.
- Comfrey—
 - cell proliferant of, (26) 530.
 - culture and composition, (32) 631.
 - culture experiments, (29) 331.
 - prickly, fertilizer experiments, (26) 631.
 - prickly, varieties, (26) 631.
- Commelina nudiflora as a feeding stuff, (35) 561.
- Commerce, internal, of United States, (32) 90.
- Commercial—
 - geography, textbook, (28) 298.
 - organizations in United States, (34) 290.
- Commiphora africana, analyses and digestibility, (27) 871; (32) 167.
- Commission on—
 - bovine tuberculosis in New York, (31) 498.
 - Industrial Training and Technical Education in Canada, (31) 401.
 - meat supply of United States, (30) 96.
- Commodities—
 - prices in Tokyo, (26) 491.
 - prices of, (26) 359.
 - prices of in 1912, (29) 190.
 - trend of prices since 1890, (26) 689.
- Communal kitchens in Europe, (39) 367.
- Community—
 - and national life, lessons in, (40) 197.
 - center, functions and organizations, (39) 690.
 - centers, suggestions for, (36) 92.
 - development, plan, (38) 694.
 - gardens—see also Gardens.
 - supervising, (31) 195.
 - improvement—see also Rural communities.
 - clubs, (31) 690.
 - markets, (39) 894.
 - school building at Wheaton, Minnesota, (37) 793.
 - service week in North Carolina, (32) 388.
- Compass plants, leaf position, (28) 228.
- Complement—
 - action, studies, (33) 280.
 - binding test, diagnostic value, (26) 283.
 - effect of arsphenamin and mercuric chlorid on, (40) 287.
 - fixation—
 - as affected by temperature, (37) 688; (38) 79.
 - effect on protein metabolism, (30) 478.
 - in tuberculosis, (40) 481, 886, 887.
 - mechanism of, (30) 276.
 - nonspecific, studies, (34) 779.
 - preparation of bacillary extracts for, (30) 281.
 - reactions, value, (26) 180.
 - relation to precipitins, (30) 478.
 - studies, (39) 80, 284.
 - fixation test—
 - antigens containing cholesterol for, (32) 272.
 - diagnostic value for abortion in cows, (29) 586.
 - multiple pipette for, (35) 680.
 - pipette holder for, (40) 581.
 - utilization, (26) 676.
 - fixation with protein substances, (40) 286.
 - preservation, (38) 80; (39) 584.
- Compositae, pollen-presentation mechanism, (34) 727; (38) 225; (39) 29.
- Composts—
 - as an aid to soil building, (36) 197.
 - inoculation with soil, (36) 516.
 - of plant materials, Philippine, (39) 523.
 - preparation, (30) 520.
- Compression, effect on root structure, (32) 825.

- Compsilura**—
 concinnata, dispersion in New England, (33) 254.
 concinnata, notes, (37) 459, 764.
 oppugnator n.sp., description, (31) 456.
- Compsomyia macellaria**, relation to myiasis aurium, (31) 777.
- Comstockiella sabalis** in California, (37) 563.
- Conarachin**, chemistry of, (37) 8, 501.
- Concanavalin**—
 chemistry of, (37) 8.
 studies, (40) 308.
- Conchaspis angroeci**—
 notes, (27) 255.
 on vanilla, (40) 56.
- Conchita peluda**, culture, (34) 736.
- Conchuella** affecting Sudan grass, (33) 747.
- Concrete**—
 aggregates for, (34) 87, 485, 685.
 aggregates, specifications, (36) 683.
 aggregates, tests, (31) 91; (38) 593.
 amount of water for, (35) 493.
 arch bridges, internal temperature range, (29) 786.
 as affected by—
 acids, oils, and fats, (29) 184.
 alkali, (32) 381, 787.
 alkali salts and sea water, (29) 686.
 calcium chloride, (36) 286.
 hydrated lime, (31) 687.
 hydrogen sulphid, (28) 589.
 moisture, (27) 891.
 salts, (30) 589.
 silage, (32) 590.
 various substances, (29) 891.
 as protection for wood-stave pipe, (34) 890.
 beams, reinforced, design, (28) 86.
 blast-furnace slag, tests, (39) 87.
 blocks, machines for, (26) 91; (30) 487.
 bridges—
 construction, (32) 686.
 reinforced, test, (31) 91.
 specifications, (34) 685.
 treatise, (30) 788.
 buildings, reinforced, tests, (30) 293.
 chute for water, (33) 586.
 coating with tar, (34) 889.
 construction—
 college instruction in, (36) 400; (38) 95.
 for gardens and lawns, (27) 645.
 inspection, treatise, (30) 487.
 manual, (32) 188.
 on livestock farms, (27) 89.
 treatise, (27) 484; (36) 188.
 work in cold weather, (29) 291.
 culverts—
 cost data, (37) 885.
 plans, (32) 485, 686, 884.
 specifications, (33) 291.
 destruction by moor water, (31) 290.
 drain tile—
 as affected by alkali, (34) 87, 584.
 construction, (34) 685.
 durability, (35) 386; (39) 393.
 reinforced, tests, (40) 787.
 drilling as a test for, (30) 787.
 durability in alkali soils, (39) 86; (40) 386.
 effect of too much water in mixing, (29) 386.
 effect of varying the percentage of water in, (33) 292.
 electrolysis of, (28) 589.
 expansion and contraction, (37) 884.
 farm buildings, construction, (32) 888.
 fence posts, construction, (28) 290; (34) 487, 685.
 flat slabs, design, (34) 685.
 flow under sustained loads, (38) 290.
 freezing and thawing, (40) 786.
 friction on various sub-bases, (38) 290.
 grain elevators, design, (34) 685.
 gravel and sand for, (35) 493.
 gravel deposits in Iowa, (32) 188.
 hydrated lime in, (35) 291; (40) 788.
 in sanitary farm equipment, (34) 273; (36) 675.
 interior temperature during setting, (26) 214.
 lining for canals, placing, (35) 186.
 lining for irrigation canals, (32) 380, 481.
 materials, tests, (35) 390.
 mixtures, proportioning, (40) 787.
- Concrete—Continued.**
 oil-mixed—
 description and use, (28) 85.
 tests, (30) 487, 889; (33) 685.
 overwet, tests, (31) 387.
 pavements—
 cracking and buckling, (38) 891.
 design, (36) 890.
 failure of, (30) 386.
 for roads, (33) 685.
 stresses on, (31) 186.
 tests, (30) 387.
 use of hydrated lime in, (31) 387.
 permeability tests, (32) 788.
 pipe for irrigation, (36) 583.
 pipe, reinforced, tests, (31) 784.
 Portland cement, proportions, (39) 86.
 posts, mold for, (32) 788.
 preparation and tests, (35) 790.
 pressure pipe, construction and tests, (23) 434.
 proportioning, (29) 386; (32) 484.
 protection against destructive agents, (29) 386.
 protective coatings for, (31) 784.
 reinforced—
 as affected by salt in warm climate, (40) 787.
 construction, treatise, (31) 186.
 designing and estimating for, (31) 290.
 for farms, (27) 589.
 shrinkage and time effects in, (34) 787.
 treatise, (27) 688.
 reinforcement bars, strength tests, (36) 684.
 resistance to wear, (34) 484.
 roads—
 and pavements, treatise, (30) 386.
 bituminous coatings for, (38) 692.
 construction, (27) 386; (31) 289, 290; (33) 781, 782, 890; (35) 390, 492; (36) 285; (39) 687.
 construction, standards for, (31) 289.
 contraction and expansion of, (31) 290; (37) 884.
 cracking, (31) 185; (35) 492; (37) 88.
 design, (36) 890.
 expansion, (31) 290.
 gradation of aggregates for, (35) 584; (37) 787.
 hydrated lime for, (34) 787; (35) 86.
 in New York, (27) 890.
 in Ontario, (33) 289.
 in Wayne Co., Michigan, (27) 789.
 measuring wear of, (34) 787.
 mixtures for, (37) 490.
 of Lake County, Ohio, (36) 384.
 pamphlet, (30) 589.
 reinforcement for, (36) 587.
 resistance to wear, (34) 484.
 roller finishing, (38) 189.
 specifications, (34) 685.
 specifications and construction, (30) 290.
 treatise, (30) 386.
 sand for, (32) 484.
 sand for, testing, (31) 386.
 sand, grading, (38) 389.
 screened gravel for, (39) 87.
 silos, handbook, (26) 790.
 slab bridge design, (40) 189.
 slabs, reinforced, loads for, (35) 86.
 slabs, reinforced, tests, (35) 290; (36) 788; (38) 490.
 slabs, tests, (38) 189, 289.
 strength as affected by—
 moisture, (29) 487.
 saturation, (30) 293.
 temperature, (34) 889.
 water, (37) 490.
 strength, tests, (34) 685.
 tile, tests, (26) 685.
 treatise, (28) 186; (35) 289, 390; (36) 285; (37) 590.
 use in drainage and irrigation, (32) 787.
 use in farm buildings, (28) 487; (29) 689.
 use in irrigation, (37) 281.
 use in the garden, (37) 746.
 use of blast furnace slag in, (33) 684.
 use on farms, (30) 487; (32) 86; (34) 485; (38) 87, 291, 292.
 v. macadam for roads, (33) 588.
 viaduct, construction, (34) 86.
 washed sand and gravel in, value, (29) 183.
 waterproofing, (28) 289, 290; (29) 787; (35) 493.
 wear tests, (36) 683.
 wet, pressure on forms, (35) 582.
 wet, pressure test, (30) 293.
 work, forms for, (31) 590; (32) 86.

- Condensed milk, *see* Milk.
 Condenser, preventing drip from, (40) 806.
 Condenser, reflux, notes, (29) 800.
 Condensers—
 laboratory reflux, comparison, (36) 413.
 new, descriptions, (40) 308, 709.
 Conditments—
 adulteration, detection, (26) 312.
 aromatic substances of, (27) 268.
 artificial coloring, (27) 809; (28) 510.
 chemistry of, progress in, (26) 405; (27) 310;
 (29) 412, 506; (30) 314; (32) 109.
 colloid chemistry, (27) 310.
 detection of benzoic acid in, (27) 715.
 examination, (26) 69, 355; (31) 509, 557.
 examination and judging, progress in, (26) 408.
 fresh, enzymic action, (30) 463.
 methods of analysis, (29) 412; (30) 201.
 value in the diet, (29) 664.
 Condition powders, examination and valuation,
 (28) 616.
 Conduits, location, (31) 90.
 Condylura cristata, notes, (31) 154.
 Cone beetles, studies, (33) 458.
 Confectioners' establishments, inspection, (26) 462.
 Confectionery—
 analyses, (32) 253, 560.
 establishments, law in Ohio, (33) 662.
 examination, (26) 661.
 from vegetables, (29) 60.
 methods of analysis, (38) 315.
 stores, inspection, (29) 661, 766; (31) 658.
 use of talc in, (33) 364.
 Conference—
 for education in the South, (28) 800.
 on Rural Education in Massachusetts, (32) 689.
 Congenital cataract in a foal, treatment, (26) 288.
 Congo red, use in culture media, (29) 528.
 Congochryosoma n.g. and n.sp., description, (37)
 350.
 Congress of—
 Alimentation at Liège, (32) 662, 760.
 Tropical Agriculture, (30) 198.
 Coniatus indicus n.sp., description, (35) 365.
 Coniferae, oils of, (33) 18, 203, 409; (34) 607.
 Coniferous—
 root parasite, (39) 254.
 rusts, host relationships, (40) 645.
 seed characteristics, importance in natural
 reproduction, (39) 750.
 seedling diseases, (40) 545.
 seedlings—
 as affected by shade and moisture, (39) 751.
 damping off, (26) 57; (28) 246; (31) 647; (36)
 547; (37) 46; (38) 553; (39) 57.
 Fusarium disease of, (30) 653.
 root rot of, (34) 546.
 white spot of, (36) 449.
 seeds—
 destruction by squirrels, (31) 154.
 germination power of, (26) 842.
 Conifers—
 abnormal wood in, (35) 43.
 as affected by mistletoe, (39) 57.
 blights of nursery stock, (30) 151.
 chermes affecting, (35) 56.
 cones and seeds, insect damage to, (31) 548.
 crosote penetration tests, (31) 743.
 culture experiments, (32) 542.
 damaged by squirrels, (26) 552.
 dichotomous key, (27) 347.
 diseases in Italy, (34) 539; (38) 351.
 diseases, notes, (27) 548; (30) 152.
 durability tests, (35) 241, 656.
 exotic, in Netherlands, (39) 352.
 for ornamental planting, (35) 345.
 for re-afforestation, (40) 248.
 for shelter belts, (40) 841.
 form height tables for, (35) 347.
 growing season, (39) 122.
 handbook, (26) 642.
 honey fungus of, (35) 155.
 importance of mixed stands, (27) 542.
 insects affecting, (39) 656.
 Japanese, seed and seedling structure in, (29)
 240.
 Japanese, wood structure, (29) 344.
 leaf cast, studies, (36) 52.
 leaf oil industry, (35) 317.
 liming experiments, (33) 739.
 Conifers—Continued.
 mistletoe injury to, (35) 459.
 natural root grafting, (36) 144.
 of central Europe, handbook, (30) 742.
 Japan, (36) 539.
 North America, leaf characters, (37) 147.
 Rocky Mountains, (39) 546.
 the British Isles, treatise, (28) 843.
 ornamental, culture, (33) 143.
 plantations in Massachusetts, (33) 645.
 red heart rot, studies, (35) 155; (40) 160.
 reproduction by layering, (28) 344.
 reproduction in New England, (35) 747.
 spraying experiments, (29) 252.
 stem lesions due to heat, (40) 53.
 structure of bordered pits, (35) 223; (37) 128.
 structure of tracheids, (29) 217.
 taking impressions of year rings, (26) 842.
 transplanting tools for, (26) 842.
 variation in size of ray pits, (33) 645.
 western, destructive distillation, (34) 509.
 wood, identification, (33) 143.
 wood structure, (28) 440.
 Coniodyctium chevalieri, studies, (27) 51.
 Coniophora cerebella—
 biology, (27) 355.
 infection of wood by, (33) 651.
 notes, (26) 551; (29) 157; (35) 252; (37) 253.
 on living trees, (35) 459.
 studies, (30) 850; (34) 547; (39) 553; (40) 350.
 Coniosporium—
 gecevi as cause of corn cob rot, (31) 642.
 gecevi n.sp., description, (26) 446.
 oryzinum n.sp., notes, (37) 148.
 spp. on sugar cane, (38) 550.
 Coniothecium—
 chomatoporum—
 notes, (32) 344, 644; (34) 543.
 studies, (37) 842; (39) 149.
 sp., notes, (31) 746.
 Coniothyrium—
 caryogenum—
 n.sp., description, (30) 453.
 transmission, (39) 763.
 coffea, notes, (38) 51.
 diploidiella, notes, (30) 247.
 fuecklii—
 dissemination by tree crickets, (35) 548.
 notes, (27) 250; (32) 544; (34) 55; (38) 546.
 relation to apple canker, (34) 653.
 hellebori, notes, (26) 844.
 kraunhiiae, n.sp., description, (27) 848.
 melasporium on sugar cane, (40) 157.
 n.spp., descriptions, (34) 242; (37) 748.
 oleae n.sp., description, (35) 333.
 oleae, notes, (26) 849.
 opuntiae n.sp., description, (30) 746.
 paenoniae n.sp., description, (37) 550.
 pirinum, inoculation experiments, (27) 651; (31)
 150.
 pirinum, studies, (29) 648; (35) 152, 547.
 sacchari, notes, (37) 553.
 tirolense, variation in, (38) 731.
 trabuti n.sp., description, (27) 752.
 Conium maculatum, notes, (30) 145.
 Conjunctival reaction, diagnostic value, (26) 379.
 Conjunctivitis—
 in man, (33) 450.
 pseudomembranous, in horses, treatment, (30)
 385.
 Connecticut—
 College, notes, (27) 98, 397, 799; (28) 396, 696;
 (29) 96, 195, 697; (30) 796; (31) 397; (32) 599; (33)
 300, 699; (34) 96; (35) 95, 697; (37) 97, 496, 896.
 State Station—
 financial statement, (27) 798; (29) 599.
 food and drug reports, index, (34) 458.
 notes, (27) 696; (28) 696; (31) 397, 900; (32)
 94; (36) 499, 899; (37) 196, 700, 896; (38) 699;
 (39) 399; (40) 398, 695.
 report, (29) 599; (31) 396; (34) 95; (36) 97; (38)
 297; (39) 799.
 report of board of control, (27) 798.
 work of, (32) 496.
 Stations, notes, (27) 900; (29) 193; (30) 900; (35)
 300, 697.
 Storrs Station—
 financial statement, (27) 492.
 notes, (27) 98, 696; (28) 396; (29) 697; (31)
 300; (37) 496, 896; (39) 399; (40) 495, 695.

Connecticut—Continued.

- Storrs Station—Continued.
 report, (32) 291; (38) 497.
 report of director, (27) 492.
- Conognatha magnifica*, notes, (30) 657.
- Conophthorus* spp. injurious to pines, (33) 458.
- Conopidae*, notes, (36) 255.
- Conorhinus*—
megistus, biology, (26) 755.
rubrofasciatus—
 host of kala-azar parasite, (28) 655.
 relation to kala-azar, (37) 358.
 trypanosome from, (27) 555.
 spp., transmission of trypanosomes by, (30) 853.
- Conorhynchus luigionii*, notes and remedies, (29) 562.
- Conostegia subhirsuta*, nematodes affecting, (28) 658.
- Conostigmus rodhaini* n.sp., description, (29) 563.
- Conotelus mexicanus*—
 notes, (37) 847.
 on cucumber, (40) 853.
- Conotrachelus*—
crataegi, see *Quince curculio*.
erinaceus, destruction by white fungus, (26) 454.
fissunguis, studies, (40) 754.
juglandis, life history and habits, (28) 553.
juglandis, notes, (28) 561; (38) 762; (40) 259.
nenuphar, see *Plum curculio*.
 sp., fumigation experiments, (32) 650.
 spp., notes, (30) 357.
- Conringia orientalis*, analyses, (33) 466.
- Conservation—
 Commission of California, report, (30) 599.
 law in New York, (37) 244.
- Conserves for the army, (34) 365.
- Consomme, examination, (31) 659.
- Contarinia—
nasturtii, notes, (28) 355.
pyrivora, notes, (27) 755; (28) 752; (30) 655, 657; (34) 752.
sorghicola, see *Sorghum midge*.
tritici, see *Wheat midge*.
viticola, notes, (30) 756.
- Contheyla rotunda*, life history and habits, (38) 359.
- Contingency, multiple and partial, theories, (36) 166.
- Controdora* sp., notes, (27) 556.
- Convection—
 diurnal system, (32) 24.
 planetary system, (35) 419.
- Conventzia hageni*—
 notes, (28) 457.
 parasitic on red spider, (32) 157.
- Convict—
 labor for road work, (36) 386.
 road camp, experimental, (38) 789.
- Convolvulus*—
arvensis—
 analyses and feeding value, (33) 70.
 extermination, (26) 236.
 inheritance in, (40) 541.
- Cooker, thermal storage, description, (33) 461.
- Cookers, fireless—
 construction and use, (36) 467.
 homemade, (31) 299.
 notes, (38) 867; (40) 361.
 tests, (26) 762.
- Cookery—
 for campers, (27) 463; (30) 763; (34) 46; (38) 469.
 French, treatise, (32) 662.
 history of, (36) 497.
 in high schools, (35) 897.
 in schools, report on, (31) 261.
 instruction, cards for, (32) 495.
 oriental, book, (31) 259.
- Cooking—
 appliances, electric, (40) 559.
 army, manual, (37) 166; (38) 567.
 boilers for poultry farms, (32) 591.
 book, (26) 261; (27) 461, 668; (28) 259, 566, 863; (29) 61, 362, 464, 661, 766; (30) 259, 365, 462, 559, 560, 763, 862, (31) 259, 260, 557, 857; (32) 255, 394, 495, 558, 662, 763; (33) 165, 662, 753; (34) 794; (37) 894.
 book, Jewish, (39) 472.
 books, bibliography, (29) 567.

Cooking—Continued.

- by electricity, (27) 463; (30) 166, 862; (31) 558, 856; (32) 65; (33) 67, 68, 461, 565; (36) 763.
 by electricity, economics of, (35) 267.
 by electricity in cafeteria, (34) 861.
 Chinese and Japanese, recipes, (32) 763.
 Chinese, recipes, (40) 560, 865.
 cooperative or public, (39) 769.
 cost of fuels, (40) 658.
 Creole, manual, (32) 358.
 destruction of vitamins by, (31) 660.
 during early history of Rome, (33) 462.
 effect on—
 digestibility of foods, (28) 66; (32) 760.
 milk, (29) 160.
 water content of foods, (26) 462.
- encyclopaedia, (26) 66.
 fireless, notes, (32) 495.
 for the sick and convalescent, (29) 898.
 gas and electric, tests, (27) 65.
 instruction in—
 continuation schools, (33) 792.
 graded schools of Wisconsin, (33) 195.
 London, (38) 394.
 Porto Rico, (33) 397.
 rural schools, (30) 462.
 vocational schools, (33) 397.
 Italian, notes, (38) 662.
 laboratory guide and notebook, (33) 697.
 laboratory manual, (37) 94.
 lessons in, (28) 493, 693, 795; (35) 898; (36) 497.
 low-temperature, (40) 865.
 New Mexican, booklet, (38) 568.
 oven temperatures in, (31) 359.
 paper bag, book, (28) 863.
 temperatures for, (38) 366.
 textbook, (32) 394; (33) 598; (34) 395; (40) 693, 899.
 training of boys in, (30) 598, 763.
 utensils—
 aluminum alloys for, (34) 257.
 enameled, danger from, (31) 260.
 field, notes, (32) 562.
 nickel, solubility, (32) 561, 763.
 nickel, usefulness, (33) 68.
 tinning, (27) 767.
- Cooks—
 supervision of health of, (30) 863.
 training school for, (26) 262.
- Coontail, culture for wild ducks, (33) 251.
- Cooperation—
 industry in Canada, (26) 445.
 stock industry in United States, (30) 845.
 treatise, (29) 644.
- Cooperation—See also Agricultural cooperation.
 and coordination in scientific effort, (39) 601.
 in various countries, (27) 269.
- Cooperative—
 associations, accounting system for, (33) 191, 192.
 farm implement societies, (39) 594.
 movements, success of, (31) 294.
 organizations, (38) 895.
 organizations, suggestions for, (32) 792.
 societies, by-laws for, (31) 294.
 storage and marketing in France, (40) 688.
 Wholesale Society Limited, history, (31) 193.
- Cooperia oncophora* in calves, (29) 384.
- Cooperia-Zephyranthes* hybrids, description, (29) 341.
- Copper's dip, dosage for sheep, (27) 683; (28) 82.
- Cossa River, average stream flow, (27) 316.
- Coot—
 European, as a game bird, (31) 555.
 North American, distribution and migration, (32) 55.
- Coover, Adah B., biographical sketch, (39) 799.
- Copestylum marginatum*, notes, (28) 451.
- Copidosoma*—
 sp., polyembryony, (40) 653.
truncatellus, parasitism, (31) 458.
- Copper—
 acetate and carbonate, fungicidal coefficient, (40) 253.
 and phosphate mixtures as sugar reagents, (38) 614.
 antagonism to alkali salts, (39) 619.
 arsenate, effect on sugar cane roots, (38) 238.
 arsenite, analyses, (26) 65.
 carbonate—
 fungicidal value, (34) 745.
 insecticidal and larvicidal value, (34) 359.

Copper—Continued.

chlorid, effect on—

- activity of malt diastase, (29) 528.
- starch ferments, (27) 109.

compounds—

- effect on irrigated crops, (38) 28.
- of organic acids, toxicity for protozoa, (37) 375.
- protein of, (37) 8.
- toxicity toward plants, (33) 327.

detection, (34) 112.

detection in water, (34) 410.

determination, (33) 612; (34) 611.

determination in—

- canned goods, (26) 408.
- conserves, (26) 208; (32) 114.
- copper sulphate, (33) 313; (35) 314.
- foods, (31) 502.
- gelatin, (40) 712.
- sprays, (32) 114.

effect on—

- Aspergillus niger*, (30) 630, 824.
- nitrogen-fixing bacteria, (38) 428.
- nutrition and health, (30) 762.
- plant growth, (36) 520.

ferrocyanid—

- fungicidal value, (35) 40; (39) 348.
- tests, (28) 48.

fungicidal value, (35) 352.

fungicides—

- absorption by potatoes, (28) 648.
- physiological effects, (28) 247.
- preparation and use, (27) 254; (28) 247.
- studies, (26) 853.

in cocoa and chocolate, (28) 862.

flora of copper-tailing region, (37) 432.

fresh tomatoes, (37) 263.

green oysters, (36) 861.

orchard soils, (31) 720.

soils, (31) 720.

soils and water, effect on crops, (37) 527.

methods of analysis, (34) 13.

mixtures, methods of analysis, (26) 205.

new precipitants for, (31) 109.

oxid, effect on germination of seeds, (29) 528.

oxychlorid, fungicidal value, (26) 853.

reaction, sensitive, (40) 807.

reduced, determination, (40) 114.

salts—

- as food preservative, (30) 364.
- bactericidal and fungicidal action, (35) 181.
- detection in wood, (26) 242.

salts, effect on—

- ammonification in soils, (31) 120.
- catalase, (26) 504.
- nitrification in soils, (29) 529; (30) 424; (31) 120.
- nutrition and health, (29) 762.
- wheat, (31) 218; (35) 324.

salts—

- of amino acids, pharmacology and toxicology, (39) 685.
- use against tuberculosis, (29) 481.
- use in greening foods, (27) 868; (28) 662.

silicifluorid as a wood preservative, (30) 646.

solution—

- action on sucrose, (35) 504.
- by fungi, (26) 853.
- for sugar determination, (40) 613.

sprays—

- acid and basic, (39) 151, 548; (40) 158.
- fungicidal value, (34) 243, 643.
- hot, insecticidal action, (34) 243.
- preparation, (40) 843.
- wetting power, increasing, (29) 850.

stearate, fungicidal value, (40) 746.

sulphate—

- analyses, (26) 26.
- and chloral hydrate, antagonistic action on peas, (30) 728; (32) 35.
- antiseptic and germicidal value, (37) 176.
- as pole preservative, (27) 148.
- potato disinfectant, (40) 450.
- soil disinfectant, (31) 621.
- vermifuge, (38) 884.
- destruction of algae by, (38) 731.
- destruction of horsetail by, (31) 741.

sulphate, effect on—

- algae in drinking water, (36) 183.
- ammonification, (28) 724.
- apple roots, (39) 40.

Copper—Continued.

sulphate, effect on—continued.

- cereals, (29) 151.
- germination of cereals, (29) 346.
- germination of wheat, (28) 242; (30) 242, 837; (32) 749.
- growth of barley, (32) 121.
- microorganisms, (39) 27.
- nitrification in soils, (35) 321.
- olives, (26) 825.
- plants, (27) 130, 131; (30) 130.
- sprouting of potatoes, (32) 829.

sulphate—

- for rice, (39) 235.
- fungicidal action, (28) 552.
- hydrolysis and oxidation in soil, (39) 522.
- preparation, (40) 801.

sulphate, production—

- and use in 1913, (32) 425.
- and use in 1913-1915, (35) 631.
- in 1915-1916, (37) 524.

sulphate—

- sprays, preparation, (39) 851.
- use against olive fumagine, (26) 850.
- use in soil disinfection, (33) 250.
- use on moor soils, (39) 439.
- valuation, (33) 313.
- toxic effect on plants, (38) 628.

tube, crushing by lightning, (34) 118.

use against cryptogamic diseases, (30) 648.

use against tuberculosis, (33) 677.

use on cranberries, (39) 749.

utilization by *Aspergillus niger*, (29) 628.

Copperized oil as a wood preservative, (32) 841.

Copa—

cake—see also Coconut cake.

- meal, analyses, (36) 167; (40) 665.
- nutritive value, (28) 673.

composition and nutritive value, (34) 565.

cost of production, (29) 439.

drying, (26) 513.

examination, (26) 611.

Indian trade in, (40) 231.

meal as a feeding stuff, (38) 368.

preparation, (29) 840; (32) 236, 315.

studies, (39) 107, 108.

Coprinus—

- comatus, prevalence in South Africa, (29) 461.
- micaceus, transmission by tree crickets, (34) 653; (35) 548.

sterquilinus, spore generation and release, (35) 431.

Coprospira and *Ascaris lumbricoides*, (39) 681.

Coprosterol, determination in feces, (40) 15.

Coptodisca splendiderella, notes, (30) 657.

Coptorhynchus sp., notes, (27) 857.

Coptotermes—

- formosanus n.sp., description, (35) 255.
- gestroi, notes, (31) 156.

Coquillettina plankii n.g. and n.sp., description, (34) 360.

Coquina, use in agriculture, (40) 816.

Coraebus spp., notes, (27) 863.

Coral—

- as sewage filtering material, (28) 789.
- rock phosphate, fertilizing value, (35) 428.
- sand, examination, (36) 319.

Corbin, tests, (33) 58.

Corchorus—

- capsularis, fertilizer experiments, (33) 432.
- olitorius, culture in Egypt, (34) 232.

Cordials, judging, (26) 209.

Cordyceps—

- barberi, description, (33) 459.
- barberi, notes, (29) 52.
- clabicipitis n.sp., description, (36) 48.
- n.sp., notes, (36) 153.
- sp., notes, (28) 746.
- sp. on flies, (36) 360.
- spp., descriptions, (33) 459.

Cordylobia—

- anthropophaga, life history and habits, (27) 759.
- anthropophaga, notes, (31) 551.

(Stasia) rodhaii, notes, (36) 359.

Coregonus—

- sp., analyses and curing, (31) 356.
- spp., breeding in Switzerland, (35) 774.

Coremium sp., notes, (30) 751; (40) 252.

Coreopsis, cut, preservation, (31) 837.

Coriander, culture under dry farming, (30) 435.

Coriaria myrtifolia as marjoram adulterant, (39) 669.

- Corigetus bidentulus* n.sp., description, (35) 365.
- Coriscus ferus*—
destruction by white fungus, (26) 454.
notes, (32) 654.
- Cork—
composition, (31) 312.
formation of fat in, (31) 312.
ground, conservation of grapes in, (28) 437.
insects affecting, (26) 60.
stoppers, insects affecting, (31) 155.
- Corks, extraction apparatus, treatment, (38) 411.
- Corn—
abnormalities due to—
copper treatment, (39) 526.
smut infection, (26) 447.
acidity investigations, (30) 734; (31) 525.
albinism in, (33) 131.
alcohol from, (28) 715.
aleurone color factors, (40) 436.
among Indians of the upper Missouri, (39) 738.
amylase, studies, (31) 609.
analyses, (26) 266, 267, 770; (27) 170, 570, 872;
(28) 265, 335; (29) 470, 633; (31) 366, 431, 464,
470, 864; (32) 862; (33) 71, 568, 761; (34) 630,
667; (39) 773.
and alfalfa for fattening lambs, (26) 73.
and alfalfa hay for lambs, (31) 867.
and cob—
ground, analyses, (34) 767.
meal, analyses, (26) 468, 568; (27) 774; (28)
464; (29) 666; (31) 863; (32) 667; (34) 665;
(36) 167; (38) 665; (39) 270; (40) 665.
and corn products, use in the diet, (38) 662.
and cowpeas, associated growth, (33) 226; (37)
731; (38) 32.
and cowpeas, seeding together, (35) 826.
and legumes, associated growth, (33) 527.
and oats, analyses, (40) 665.
and oats, ground, analyses, (27) 170; (29) 367.
and peanuts as a mixed crop, (37) 734.
and pig clubs, combining, (30) 694.
and rye, analyses, (32) 667.
and sorghums, transpiration, (39) 440.
and soy beans—
as silage crop, (40) 135.
associated growth, (38) 338.
for silage, seeding experiments, (40) 135.
and teosinte, crossing experiments, (26) 40.
and teosinte hybrids, immunity to aphids, (38)
561.
and the westward migration, treatise, (37) 94.
anomalies of, (32) 131.
anomalous seed, (39) 32.
anomalous seeds and bud sports in, (36) 134.
antagonistic effect of salts on, (39) 824.
antineuritic vitamins in, (38) 581, 869.
artificial pollination, (26) 535.
- as affected by—
barium and strontium, (40) 819.
borax in fertilizer, (40) 322.
detasseling, (34) 426.
Diplodia zeae, (36) 247.
disinfectants, (26) 820.
distance of planting, (30) 436.
frost, (30) 138.
guanidin, (28) 427.
kerosene, (32) 729.
lead nitrate, (26) 225.
lithium salts, (28) 526.
manganese sulphate, (26) 226.
maturity and harvesting methods, (40) 330.
radioactivity, (30) 224.
soil fertility, (39) 339.
soil temperature, (38) 530.
submersion, (32) 829.
- as dry-farm crop, (37) 637; (39) 131, 736.
feeding stuff, (32) 97, 200.
food, (31) 555, 656; (38) 265.
forage crop, (31) 829.
host of curlew bug, (27) 162.
silage crop, (31) 829; (39) 33, 134, 227, 231,
737; (40) 134, 330, 331, 332, 336, 337, 431,
731, 733, 735.
sole ration for animals, (33) 367, 662; (39) 71.
source of nitrogen in rations, (28) 264.
substitute for rice in Philippines, (32) 64.
supplement for wheat in bread making, (37)
263.
ash analyses, (29) 861.
- Corn—Continued.
assimilation of—
nitrogen by, (26) 32; (28) 225; (37) 223.
organic phosphates by, (29) 423.
bacterial disease, new, (37) 48.
barren, composition, (40) 330.
barren stalks, (37) 536; (38) 849.
barrenness, studies, (40) 624.
beetle in Rhodesia, (39) 565.
beetle, notes, (34) 754.
behavior of organic substances in, (39) 526.
belt, climatic and edaphic factors, (39) 734.
belt, climatic features, (40) 117.
biennial cropping, (32) 226; (38) 430.
billbug—
control, (40) 655.
life history, (35) 760.
life history and habits, (29) 56.
notes, (28) 653.
southern, (36) 157; (37) 666.
studies, (26) 862; (27) 162; (37) 666.
- borer—
European, in Massachusetts, (39) 62.
European, notes, (31) 252.
in young plants, (39) 358.
lined, notes, (33) 252.
- bran—
analyses, (26) 468, 568, 665; (27) 570, 670;
(28) 364, 464; (29) 270, 666; (30) 67, 68, 169,
868; (31) 663, 863; (32) 169, 667, 862; (33)
371; (34) 72, 169, 263, 467, 665, 767; (36) 167,
268, 667, 765; (38) 67, 369, 665; (39) 167,
270, 370; (40) 72, 571, 665.
ash analyses, (29) 861.
description, (40) 72.
digestibility, (31) 863; (39) 171.
mineral constituents, digestibility, (40) 769.
- brandy, judging, (26) 209.
- bread, recipes, (37) 364.
- breakfast foods, manufacture and use, (28) 861.
- breeding, (29) 633, 737; (40) 523.
- breeding—
and selection experiments, (35) 32.
experimental error in, (39) 831, 832.
experiments, (26) 833; (27) 737, 741; (28) 232;
(29) 229; (30) 231, 336; (31) 331, 734; (32)
536, 827; (33) 34, 331; (34) 144; (35) 229, 336,
531, 829; (36) 735, 838; (37) 226, 827; (38)
231, 336; (39) 31, 338, 339, 746; (40) 33, 323,
624, 826.
experiments, personal equation in, (26) 734.
for protein and oil, (32) 733.
plan for, (39) 339.
statistical study, (38) 232.
work with northwestern Indian varieties,
(39) 738.
- brown rust, studies, (29) 45.
- budworm, notes, (30) 56.
- bushel weights, (37) 889.
- by-products, analyses, (27) 570; (28) 464; (29)
271; (39) 270.
- cake, analyses, (30) 268.
- canned, examination, (26) 68; (28) 357; (32) 161;
(38) 166.
- canned, starch in, (35) 765.
- canning, (39) 165.
- canning industry in United States, (32) 210.
- "Cariaco," tests, (33) 536.
- characters in, analysis, (28) 534.
- chlorophyll inheritance, (39) 825.
- chlorosis in, (31) 221.
- chlorosis, studies, (26) 213; (33) 522; (38) 48.
- chop—
analyses, (26) 467, 568, 665, 768; (27) 469;
(28) 464, 572; (29) 270, 467; (30) 565; (31)
366, 863; (32) 568, 667, 862; (33) 870; (34)
169, 263, 467; (36) 765; (38) 369, 572; (39)
370; (40) 571.
digestibility, (37) 678.
digestibility and productive value, (37) 865.
heating, (28) 168.
- club—
champions in 1913, (30) 399.
contests, notes, (28) 395.
work, contests for, (28) 493.
- clubs—
in Arkansas, (33) 95.
Kentucky, (32) 197.
Philippines, (30) 395; (32) 495.
rural schools, (32) 693.

Corn—Continued.

- clubs—continued.
 - in Southern States, (32) 492.
 - Virginia, (29) 599.
 - notes, (32) 898.
 - suggestions for, (31) 793, 794.
- cob and other ear characters, relation, (38) 532.
- cockle—
 - effect on baking quality of wheat, (34) 558.
 - poisoning horses, (39) 892.
 - seeds, variation in during maturity, (28) 525.
- commercial grades, (31) 73.
- competition in, (27) 431.
- composition, (31) 431.
- composition and—
 - digestibility, (33) 568.
 - yield, as affected by width of rows, (29) 533.
- composition as affected by—
 - companion crop, (26) 617.
 - fertilizers, (40) 434.
 - irrigation, (28) 332.
- composition at different stages, (31) 431; (36) 36.
- contests for boys and girls, (28) 194.
- contests in Rhode Island, (28) 299.
- cooperative experiments, (27) 430.
- correlation—
 - of aleurone and chlorophyll factors, (37) 526.
 - of characters in, (30) 830; (35) 331.
 - studies, (33) 426.
- cost of production, (26) 830; (28) 41; (29) 690; (32) 135, 594, 688; (33) 34, 293; (34) 137; (35) 691; (37) 191; (40) 292.
- cost of production in—
 - Fiji Islands, (27) 234.
 - Great Plains area, (33) 231.
 - South, (39) 294.
- cover crops for, (40) 133.
- cracked, analyses, (26) 568, 665; (27) 171; (28) 265, 669; (29) 270, 467; (31) 467; (32) 667, 862; (34) 665; (36) 268, 765; (37) 268; (38) 572.
- critical period of growth, (35) 617; (39) 811.
- crossbreeding, (26) 634; (29) 229; (34) 228, 529.
- crushed, analyses, (26) 568.
- crushed ear, analyses, (29) 270.
- cucujus, notes, (26) 453.
- culture, (26) 834; (27) 337, 339; (28) 299; (29) 193, 229, 335, 395, 830; (30) 37, 435; (31) 432, 693, 791; (32) 132, 226; (33) 36; (34) 337, 529, 630, 694; (35) 33, 598; (36) 95; (37) 396, 642; (39) 834.
- culture—
 - contest in Iowa, (33) 697.
 - contests in Alabama, (28) 194.
 - continuous, (31) 430; (40) 419.
 - continuous, effect on soils, (35) 813.
 - continuous, v. rotation, (33) 35.
 - effect on height of stalk and ears, (33) 729.
 - experiments, (26) 38, 233, 422, 437, 630, 733, 735, 830; (27) 136, 232, 430, 529, 530, 533, 638; (28) 135, 136, 233, 534, 633; (29) 137, 223, 225, 226, 425, 630, 736, 738, 830; (30) 229, 632, 828; (31) 628, 829; (32) 132, 430, 431, 526, 529, 530; (33) 31, 34, 35, 231, 332, 528, 729, 830; (34) 34, 228, 431, 434, 735; (35) 135, 337, 338, 827, 829; (36) 132, 133, 332, 735, 829; (37) 32, 226, 329, 436, 529, 535, 730, 734; (38) 31, 217, 229, 334, 336, 430, 527, 630, 632, 634, 735, 825, 827, 829, 830; (39) 127, 128, 217, 227, 335, 336, 339, 435, 436, 437, 632, 834, 835; (40) 34, 228, 319, 329.
 - experiments in India, (40) 230, 523.
 - experiments in Queensland, (40) 230.
 - experiments in Rhodesia, (40) 230, 825.
 - for silage, (32) 431.
 - in Argentina, (35) 136.
 - Bessarabia, (29) 335.
 - California, (26) 234.
 - Dutch East Indies, (30) 697.
 - Egypt, (37) 233.
 - Guam, (30) 37.
 - Hawaii, (29) 633.
 - Kansas, (39) 815.
 - Kentucky and West Virginia, (29) 534.
 - Manitoba, (30) 830.
 - Mexico, (32) 131.
 - Michigan, (39) 320.
 - Montana, (32) 134; (35) 735; (38) 135.
 - Nebraska, (30) 831; (35) 438.
 - New Mexico, (40) 18.

Corn—Continued.

- culture—continued.
 - in New South Wales, (31) 831; (36) 439; (40) 526.
 - North Carolina, (30) 37; (36) 95.
 - Northwest, (37) 437.
 - Nyasaland, (26) 829.
 - Philippines, (26) 361; (28) 634; (40) 228, 231, 627.
 - Rhodesia, (40) 230, 333, 825.
 - sand hills of Nebraska, (35) 827.
 - South Africa, (34) 227.
 - South Dakota, (40) 34.
 - Southeastern States, (35) 639.
 - Texas, (28) 738; (29) 429.
 - the East, (27) 639.
 - Tucuman, (37) 134.
 - Utah, (38) 230.
 - Washington, (35) 339.
 - Wisconsin, (28) 823.
- lessons on, (28) 598.
- new method, (31) 629.
- on muck soils, (33) 33.
- on Ozark uplands, (38) 217.
- on Wisconsin drift soil, (36) 623.
- relation to rainfall, (33) 715.
- rotations for, (27) 531.
- treatise, (27) 640; (29) 830; (31) 898; (32) 228, 434, 829; (38) 93.
- under dry farming, (26) 828; (30) 435; (31) 429; (33) 632; (36) 439, 528, 529; (37) 329; (39) 131.
- under shade, (27) 741.
- Williamson plan, (27) 433.
- with soy beans, (39) 336.
- with velvet beans, (39) 529.
- cutworms affecting, (29) 252.
- Dahomey white, analyses, (28) 359.
- day annual for schools of Illinois, (31) 298.
- degerminated, analyses, (29) 367.
- dent, scoring, (28) 492.
- depth of sowing tests, (27) 835.
- destruction by crawfish, (27) 551.
- deterioration, (29) 7.
- determination of acidity, (36) 414.
- determination of soundness, (31) 525.
- determining proper stand, (40) 299.
- development, factors affecting, (35) 827.
- development, studies, (33) 226.
- diet, excessive, effects of, (31) 859.
- diet, relation to pellagra, (26) 871.
- dietary deficiencies, (36) 360.
- dietary properties, (37) 164, 264, 767.
- different types, water absorption, (40) 137.
- digestibility, (28) 335; (32) 866; (37) 672.
- dipteran pest, (40) 56.
- direct panification, (40) 460.
- disease in Porto Rico, (37) 839.
- diseases—
 - and insect pests, (38) 834.
 - descriptions, (30) 351.
 - in West Indies, (37) 452; (40) 155.
 - notes, (26) 446; (31) 841; (33) 146; (35) 245.
 - studies, (39) 149.
- distance experiments, (29) 737, 738; (36) 131; (38) 31, 335.
- distillery residues, effect on composition of milk, (29) 374.
- distribution of nitrogen in, (36) 269.
- downy mildew, notes, (31) 51, 242.
- drills, tests, (27) 387; (30) 292.
- drought resistance and stomata in, relationship, (30) 628.
- drought resistance of, (28) 633.
- drought-resistant strains, (36) 131.
- dry rot, notes, (34) 242.
- dry rot, studies, (36) 48.
- drying, (37) 509.
- drying and storing, (27) 277.
- ear and kernel, measurement, (38) 33.
- ear characters in, (36) 197.
- ear characters, relation to yield, (37) 136; (39) 635; (40) 435.
- ear rot, transmission by insects, (36) 55.
- ear rots, notes, (29) 793.
- ear, shuck protection, (39) 862.
- early maturing, developing, (30) 197.
- ears, monstrosity in, (31) 51.
- ears, soft, ensiling, (34) 371.
- ear-to-row test, (30) 830; (35) 338.
- ear-type selection, (39) 339.

Corn—Continued.

earworm—

- control, (32) 551; (34) 63; (37) 760; (40) 352.
- dust sprays for, (36) 56.
- injurious to alfalfa, (29) 252.
- life history and habits, (32) 652.
- notes, (29) 652; (30) 356; (34) 62, 232; (38) 261, 445, 653.

effect of—

- crossing on yield, (29) 533.
- hybridization on maturity and yield, (39) 31.

effect on—

- color of egg yolk, (26) 771; (31) 474.
- composition of following wheat crop, (34) 230.
- fetal development, (33) 266.
- following crop, (32) 224; (40) 623.
- milk and butter, (34) 570.
- nitrate content of soils, (29) 818.
- soil bacteria, (37) 421.
- soil fertility, (27) 136.
- soil moisture, (28) 321.

Egyptian, notes, (29) 141.

elements necessary to development of, (33) 522.

embryo, morphology, (37) 127.

endosperm color and albinism, (38) 28.

evaporation of water by, (29) 525.

evolution of, (40) 728.

exhibits, preparation, (26) 392; (31) 495.

experiments, contradictory results, (40) 300.

exposition, Columbia, S. C., meeting, (28) 399.

extracts, toxicity, (29) 175.

fairs and exhibitions in United States, (28) 796.

feed meal—

- analyses, (31) 863; (32) 667; (34) 72; (36) 268, 765; (37) 471; (38) 369; (39) 270, 370; (40) 571, 665.

description, (40) 72.

feeding value, (40) 668.

feeding value, (34) 867.

feeding value as affected by soaking, (26) 667.

fertilizer—

- experiments, (26) 32, 422, 630, 631, 735, 817, 829, 830, 834; (27) 32, 137, 324, 629, 638, 639; (28) 34, 124, 230, 325, 338, 493, 721, 724, 734, 735; (29) 31, 32, 129, 137, 728, 731, 736, 737, 829; (30) 34, 232, 325, 326, 327, 426, 436, 525, 820, 821; (31) 38, 122, 331, 421, 428, 430, 432, 628, 829; (32) 132, 217, 226, 321, 423, 431, 434, 629, 630, 732, 733, 819, 829; (33) 32, 34, 35, 36, 828, 830; (34) 35, 128, 131, 294, 421, 431, 434, 529, 621, 622, 723; (35) 220, 336, 338, 531, 724, 728; (36) 212, 229, 425, 623, 626, 735, 832; (37) 28, 229, 436, 440, 627, 731; (38) 217, 218, 230, 335, 517, 619, 634, 820, 825, 828; (39) 21, 22, 127, 217, 327, 335, 339, 421, 434, 436, 528, 531, 623, 624, 726; (40) 125, 218, 230, 319, 323, 332, 422, 431, 434, 515, 523, 524, 624, 723, 728, 733, 825.

experiments with bat guanos, (39) 426.

formulas for, (31) 628.

fertilizing in the hill, (35) 499.

field tests in Fiji, (40) 231.

flakes, analyses, (28) 464; (32) 169.

flea-beetle—

- desert, (36) 658.
- notes, (26) 856; (33) 746; (34) 232; (36) 753.

flint—

- culture in Montana, (33) 526.

seeding depths, (40) 227.

flour—

- analyses, (27) 570, 670.

digestibility, (40) 360, 657.

nutritive value, (35) 368.

recipes, (40) 67.

flower, effect on yield of rye and barley, (30) 531.

flowers—

- abnormalities in, (29) 33, 629.

morphology, (36) 430.

perfect, (26) 40, 325.

fly or leafhopper, notes, (30) 356.

fodder—

- analyses, (32) 169; (33) 759.

digestibility, (28) 363.

handling, (27) 889.

mineral constituents, digestibility, (40) 769.

following alfalfa, (39) 130, 436.

following clover, (39) 436.

Corn—Continued.

food value, (30) 557.

for forage, experiments, (26) 632.

for forage, seeding rate, (40) 522.

for silage—

- analyses, (33) 71; (35) 532.
- cost of production, (34) 137.
- culture experiments, (36) 32.
- seeding experiments, (31) 35; (32) 530.
- time of cutting, (37) 99.
- varieties, (31) 35, 226; (32) 333, 827; (33) 631 (34) 139; (35) 229; (37) 435; (39) 128, 134 333, 435, 736, 835; (40) 134, 332, 431.
- yields, (37) 228; (38) 174.

for steers in South, (40) 873.

formation of sugar in, (28) 225.

from Sudan, (29) 633.

fungus disease affecting, (28) 150, 846.

Fusarium disease, studies, (36) 348.

germ cake, analyses, (30) 467.

germ cake for pigs, (26) 477.

germ, effect on milk and butter, (34) 570.

germ meal, analyses, (28) 464; (30) 169; (31) 863; (32) 169, 667; (34) 263; (35) 562; (36) 268; (38) 67, 665; (39) 370; (40) 571.

germ meals, starch and hominy, feeding value, (40) 668.

germinability in relation to temperature and humidity, (37) 736.

germinated, meal from, (38) 665.

germinating, constituents of, (35) 202.

germination as affected by—

- carbon bisulphid, (28) 456.

depth of planting, (36) 437.

metallic compounds, (29) 528.

salt concentration, (39) 732.

germination—

- energy of, (29) 538.

in presence of quinonoids, (35) 129.

studies, (38) 24.

tests, (26) 795; (27) 737; (28) 831; (29) 740.

tests in hydrogen peroxid, (27) 201.

tests, value of (33) 36.

germs, acidity, (35) 770.

gluten feed—

- analyses, (33) 371; (34) 72, 263; (37) 268; (38) 67, 368, 369, 572; (39) 773; (40) 571, 665.

and meal, analyses, (39) 370.

for lambs, (40) 874.

gluten meal, analyses, (34) 72, 371; (37) 268; (38) 67, 369; (40) 571, 665.

gluten, protein supplements for, (36) 666.

grades for, (32) 138, 433; (36) 268.

grading, (36) 230.

grading for planters, (28) 233.

graphic summary of seasonal work, (39) 495.

grazing off, (40) 371.

green—

- analyses, (27) 170.

cost of distribution, (29) 492.

judging, (28) 669.

manuring experiments, (36) 518; (39) 31, 326, 339, 423, 725; (40) 126.

steaming and ensiling, (31) 467.

grinding—

- and shelling for hogs, (30) 100.

for steers, (32) 864.

power required for, (35) 586.

stone and roller process, (33) 259.

ground—

- analyses, (36) 65; (38) 376; (39) 167.

digestibility, (32) 69, 70; (37) 677.

growing—

- contest for boys, (27) 395.

with legumes, (40) 627, 729.

with oats and millet, (40) 822.

with pumpkins, (40) 230.

with soy beans, (40) 135.

with tobacco for shade, (40) 229.

growth and maturity as affected by soil moisture, (39) 20.

growth as affected by—

- alkali salts, (34) 125.

Azotobacter, (28) 814.

carbon dioxide, (32) 422.

lead nitrate, (31) 226.

manganese, (30) 823.

meteorology, (29) 510.

radioactivity, (28) 731.

Corn—Continued.

growth—

- at different temperatures, (32) 334.
- daily course, (40) 31.
- in atmospheres lacking carbon dioxide and oxygen, (39) 526.
- relation to climate, (33) 116.
- relation to temperature and moisture, (40) 19.
- shade, (29) 130.
- metabolism, and imbibition, (38) 729.
- on acid soil, (40) 324.
- on cogen soils, (31) 38.
- studies, (40) 233.
- studies, methods, (38) 526.

Guinea, smut, of treatment, (40) 48.

hail injury to, (35) 734.

harvesting, (29) 534.

harvesting with sheep, (38) 68.

head smut, notes, (35) 45.

head smut, studies, (31) 747.

heated, carbon bisulphid explosion in, (26) 864.

heterosis in, bearing on double fertilization, (40) 226.

high-protein strains, isolation, (40) 732.

hill and row tests, technique, (39) 129.

history and culture, (35) 338.

hogging down, (30) 69; (31) 471; (32) 224; (33) 871; (36) 171, 767, 869; (37) 679; (38) 68; (39) 173, 375, 778, 779, 878; (40) 75, 371, 471, 771.

Hopi, drought resistance in, (30) 436.

humin nitrogen content, (40) 510.

huskers and shredders, specifications, (37) 886.

husks, use as tamale wrappers, (26) 234.

hybrid strains, (40) 329.

hybridization and selection, (38) 336.

hybridization experiments, (26) 833; (27) 428.

hybrids—

and parents, comparison, (32) 133.

chimeras in, (40) 826.

notes, (27) 339.

identification of races, (38) 33.

imports from Argentina, (31) 95.

improvement, (28) 737; (29) 736; (30) 336; (32) 630; (40) 327.

improvement—

by selection, (32) 433.

in Nebraska, (29) 534.

Philippines, (36) 529.

Russia, (29) 534.

Uruguay, (34) 630.

Improvers' Association of Nebraska, proceedings, (40) 826.

in the diet, recipes, (39) 67, 367, 768, 871.

in the diet, studies, (39) 769, 873.

inbreeding experiments, (34) 228; (35) 441; (40) 323.

Indian recipes, (40) 172.

inheritance—

in, (27) 737, 740; (28) 534, 739; (29) 34, 333;

(30) 342; (34) 431.

of alterations in, (34) 31.

characters in, (27) 533.

color in, (28) 331.

color in aleurone cells, (28) 634.

endosperm color in, (35) 227; (38) 28, 226, 731.

mosaic pericarp color, (38) 332, 531.

seed characters, (32) 726; (36) 521.

somatic variation in, (31) 135.

sterility, (39) 746.

waxy endosperm in, (30) 336.

inoculation experiments, (28) 426.

inoculation experiments with brown rot fungus, (33) 247.

insoluble phosphoric acids of, (39) 14.

insects affecting, (26) 553, 753, 857; (27) 453, 552, 554, 556; (28) 248; (30) 546; (31) 252, 548; (33) 153, 451; (34) 529, 851; (37) 460; (38) 54, 459, 834; (39) 556, 762, 861; (40) 453.

irrigation, (23) 621; (31) 328; (36) 439.

irrigation experiments, (28) 130, 132, 134, 588, 827; (29) 32; (30) 34, 886; (31) 428; (32) 37, 186, 225; (33) 827; (34) 721; (36) 886; (37) 85, 440; (38) 634; (40) 230.

irrigation, fall, (37) 822.

judging, (32) 631; (33) 898.

judging standing fields, (28) 638.

kernel—

abnormal, (39) 32.

amino acid in, (33) 665.

Corn—Continued.

kernel—continued.

fasciation in, (36) 335.

life history, (32) 898.

variations, (39) 127.

kernels—

analyses, (30) 868.

heavy v. light, (39) 339.

lace-bug, new, (39) 559.

leaf—

beetle, southern, investigations, (33) 358.

blight, notes, (34) 844.

bloch miner, studies, (31) 158.

louse, notes, (29) 252.

miner, studies, (29) 257; (31) 158; (36) 256.

leafhopper, parasites of, (37) 163, 847.

Learning, notes, (26) 437.

leaves, heredity in, (28) 231.

leaves, variation of water and dry matter in, (37) 637.

lessons on, (26) 392; (27) 394; (28) 393; (32) 197, 494; (33) 196; (39) 299.

lime-magnesia requirements, (29) 521.

liming experiments, (32) 31, 132; (34) 132, 133, 520; (35) 816; (36) 230; (39) 339, 421, 424, 434.

linkage in, (39) 331; (40) 33.

lobed leaves in, (37) 136.

loss of weight in grinding, (30) 506.

lye hulling for hominy, (34) 66.

malnutrition, (28) 345.

maltase content, (31) 204.

malting capacity, (40) 808.

manurial value, (40) 127.

manuring experiments, (39) 335, 725.

marketing and grading, (33) 294.

marketing in North Carolina, (33) 595.

mass mutation in, (39) 432.

meal—

analyses, (26) 165, 468, 568, 665, 666; (27) 171, 774; (28) 265, 464, 465, 669; (29) 270, 570, 666, 769; (30) 67, 68, 169, 268, 868; (31) 467, 663, 863; (32) 259; (33) 71, 259, 371; (34) 371, 467, 469, 665, 668; (35) 867; (36) 167, 667; (38) 67, 368, 572, 665; (39) 773; (40) 470, 571.

analyses and feeding value, (39) 278.

and flour, recipes, (39) 871.

as flour substitute, (37) 895.

as food, (30) 557.

availability of nitrogen in, (26) 124; (27) 723.

bolted, ash analyses, (29) 861.

classification, (33) 259.

composition and digestibility, (38) 68.

composition and nutritive value as affected by milling, (30) 865.

cracked, analyses, (35) 562.

degerminated, keeping quality, (33) 260.

diet of prisoners, (31) 464.

energy value, (33) 72; (36) 469; (38) 68.

feeding value, (39) 782.

grinding and use, (28) 360; (30) 165.

inspection in South Carolina, (28) 265.

manufactured by different processes, composition and keeping qualities, (33) 259.

nutritive value as affected by milling, (36) 464.

phosphoric acid content, (33) 752.

products, analyses and digestibility, (31) 161.

products, composition and digestibility, (33) 564.

relation to pellagra, (29) 768; (33) 464, 565, 662.

studies, (28) 663.

unbolted, analyses, (33) 870.

use in sweet clover silage, (40) 10.

measuring for feed, (39) 834.

Mendelian chemical characters in, (29) 830.

"Meroer," notes, (26) 437.

mildew or dry rot, notes, (26) 447.

mill market for, (38) 895.

milling experiments, (40) 556.

mineral nutrition, (28) 224; (31) 221.

moisture content in storage, (31) 331.

mold, notes, (29) 793; (31) 641; (32) 337.

moldy, effect on horses, (30) 485.

moldy, effect on live stock, (27) 156.

Moqui Indian, culture experiments, (32) 526.

Moro, notes, (30) 231.

Moro, origin, (40) 234.

mosaic coherence of characters in, (29) 633.

Corn—Continued.

- nematode infection of, (36) 150.
- nitrate fertilizers for, (31) 831.
- nitrogen assimilation by, (27) 634.
- notes, (26) 362; (34) 337.
- nutritive value, (36) 158; (39) 266, 364, 368, 665, 666, 873.
- nutritive value and use in the diet, (29) 864.
- oil as constituent of olive and cottonseed oils, (32) 161.
- oil cake, analyses, (26) 363; (27) 872; (36) 667.
- oil, detection, (28) 412; (29) 613.
- oil, digestibility and uses, (40) 268.
- oil, hydrogenation, (29) 459.
- oil meal—
 - analyses, (26) 568; (27) 171, 570, 670, 872; (28) 465, 669; (30) 863; (35) 582, 867; (37) 471; (38) 369; (39) 270, 773; (40) 571.
 - description (40) 72.
 - digestibility, (28) 464.
 - for pigs, (38) 372.
- oil, physical constants, (35) 312.
- oil, production and use, (37) 511.
- oil, production in United States, (40) 614.
- oil, refractive index, (27) 614.
- old and new, nutritive value, (33) 466.
- on acid-manganese soil, (39) 627.
- on inoculated soil, (39) 519.
- pedigreed—
 - in Wisconsin, (40) 624.
 - yields in Wisconsin, (37) 438.
- pentosans in, (28) 312.
- Peronospora disease, (37) 552.
- Physoderma disease—
 - notes, (38) 351.
 - studies, (40) 846.
- phytin content, (31) 708.
- place effect, (38) 738.
- plant—
 - factors affecting development, (37) 732.
 - food removed by, (36) 40.
 - louse, notes, (28) 653.
 - vigor, relation to yield, (39) 636.
- planter tests, value and method, (26) 398.
- planters, tests, (28) 199, 233.
- planting—
 - and harvesting dates, (26) 533.
 - dates, (37) 316.
 - experiments, (27) 339.
 - various parts of ear, (29) 31.
- plat arrangement for variety tests, (26) 434.
- pollen, physiology of, (33) 433.
- pollen, vitamin content, (40) 564.
- pollination, (36) 527.
- pollination—
 - experiments, (28) 831; (30) 635; (32) 228; (37) 137.
 - studies, (34) 233.
 - technique, (40) 627.
- popability, (34) 145.
- potato stem borer on, (39) 160.
- preparation for—
 - fattening steers, (33) 265.
 - food in Belgian Kongo, (31) 357.
 - hogs, (26) 599.
 - steers, (38) 272.
- preservation, (29) 312.
- preservation by pressure, (32) 416.
- press cake, analyses, (40) 72.
- prices and shrinkage, (34) 337.
- prices, geographical phases, (39) 895.
- Production Act of Great Britain, (40) 589, 891.
- production—
 - and prices in United States, 1908-1918, (40) 93.
 - and rainfall, correlation, (35) 14.
 - in Brazil, (40) 826.
 - 1911, (26) 595, 792.
 - Russia, (26) 294.
 - St. Vincent, (39) 835.
 - United States, (26) 293.
 - 1918 program, (38) 833.
- productiveness—
 - as affected by inbreeding, (28) 232.
 - of first generation crosses, (26) 634.
- products—
 - analyses, (29) 367.
 - as human food, (32) 560.
 - growth-promoting properties, (40) 67.
 - manufacture and use, (28) 861.
 - pentosans in, (28) 312.

Corn—Continued.

- products—continued.
 - preparation, (38) 365.
 - vitamin content, (39) 314.
- protein—
 - and ash for growing animals, (37) 164.
 - efficiency for milk production, (33) 276.
 - nutritive value, (28) 759; (29) 62; (32) 164; (36) 865; (39) 266, 364, 665, 666, 873.
 - supplements for (36) 560.
 - utilization, (26) 358.
 - utilization by man, (31) 555.
- proterogynous habit of, (28) 737.
- radium fertilizer for, (32) 821.
- ratio of tops to roots, (31) 628.
- raw, sterilized, and decorticated, food value, (40) 268.
- red dog flour, analyses, (39) 167.
- refuse, nutritive value, (29) 665.
- region, meteorological service, (39) 718.
- relation—
 - of anatomy to height of stalk and nitrogen content, (32) 829.
 - to climate, (28) 27.
 - to pellagra, (26) 263, 486; (27) 568; (29) 175.
- removal of plant food by, (37) 232.
- removal of suckers, (39) 829.
- resistance to cold, (39) 525.
- Rhodesian, ear characteristics, (30) 734.
- right- and left-handedness in, (27) 236; (30) 335.
- root aphid—
 - control, (28) 855; (33) 60; (35) 356.
 - life history and remedies, (38) 54, 764.
 - notes, (27) 656; (29) 252; (31) 250.
- root disease, treatment, (26) 733.
- root parasites of, (31) 842.
- root rot and wheat scab, relation, (40) 49.
- root system, (36) 827.
- root systems and leaf areas, (35) 437.
- root worm—
 - control, (39) 264.
 - northern, life history and habits, (35) 356.
 - northern, notes, (29) 252.
 - notes, (26) 654; (30) 56.
 - southern, life history and remedies, (27) 360.
 - southern, on artichoke, (40) 58.
 - western, notes, (32) 250.
- roots, toxic excretion, (27) 30.
- rotation experiments, (33) 231, 429, 828, 829; (36) 528, 829; (38) 129, 334, 739; (40) 331, 431, 829.
- rust, notes, (37) 453.
- rusts in Barbados, (33) 445.
- rusts in Canada, (34) 51.
- salvage, analyses, (26) 714.
- sampling and grading, (36) 836; (38) 140; (40) 39.
- Sclerospora macrospora on, (39) 753.
- score card for, (26) 332.
- screenings, analyses, (28) 572.
- screenings, ground, analyses, (33) 371.
- seed—
 - bed, preparation, (33) 232.
 - buying, (30) 734.
 - care, (27) 737.
 - curing, (31) 829.
 - disease-free, selection, (40) 526.
 - from different parts of ear, tests, (26) 829; (33) 635.
 - germination tests, (27) 138; (34) 139, 830.
 - handling and planting, (29) 335.
 - home-grown v. imported, (38) 738; (40) 431.
 - home-grown, value, (27) 736.
 - homemade testers for, (31) 139.
 - maggot, notes, (29) 454; (32) 448; (35) 363.
 - notes, (28) 298.
 - preparation for planting, (31) 190.
 - preparation, primitive methods, (40) 137.
 - preservation, (36) 439.
 - protection from wireworms, (33) 657.
 - purchasing and testing, (27) 138.
 - sale by United States Department of Agriculture, (38) 834.
 - selecting and storing, (31) 331.
 - selecting, curing, and testing, (34) 35.
 - selection, (26) 332; (29) 736; (36) 638; (38) 335, 434; (40) 135.
- seed, selection—
 - and care, (35) 136, 229.
 - curing, (35) 735.
 - storage, (39) 637; (40) 34.
 - testing, (38) 739.
 - experiments, (37) 830.

Corn—Continued.

- seed—
 - situation, review, (29) 634.
 - storage, (34) 139; (40) 334.
 - storing under tropical conditions, (39) 738.
 - testing, (26) 299; (28) 42; (29) 899; (31) 394; (33) 895; (38) 834; (39) 238.
 - treatment, (39) 238, 363; (40) 443.
 - viability as affected by age, (31) 624.
- seedling experiments, (29) 224, 225; (30) 232; (35) 828; (37) 226, 232, 734; (39) 130, 338, 830; (40) 730.
- seedlings as affected by—
 - cerium chlorid, (31) 326.
 - position of grain on cob, (39) 533.
 - ultraviolet rays, (26) 430.
- seedlings, translocation of seed protein reserves in, (37) 24.
- selection, (31) 525.
- selection experiments, (33) 35; (37) 32, 636, 732; (39) 339, 835; (40) 522, 623.
- self-fertilization, (40) 33.
- self-pollination, determination, (37) 537.
- shelled, official standards, (40) 39.
- shelled, v. clover hay for sheep, (29) 572.
- shock, ensiling, (33) 274.
- shock, for silage, (32) 666.
- shocked, and beet tops, silage from, (28) 873.
- shoots, etiolated, absorption of nitrogen by, (35) 435.
- shrinkage—
 - in, (33) 36.
 - in transit, (30) 337.
 - tests, (38) 840.
- shucks—
 - chloroform extract of, (31) 71.
 - composition, (27) 668.
 - digestibility, (27) 669; (37) 168.
- silage, *see* Silage.
- silk beetle, notes, (34) 555.
- silks, oxydases in, (30) 709.
- Silver King, for northern Iowa, (30) 37.
- simple exercises with, (27) 598.
- sirup and corn sugar manufacture (38) 266.
- sirup, standards for, (29) 867.
- smut—
 - cause and treatment, (30) 47.
 - description and treatment, (26) 341; (31) 446; (39) 248.
 - dissemination and treatment, (33) 51.
 - introduction into New South Wales, (26) 52.
 - life history and treatment, (28) 445.
 - notes, (35) 348; (39) 851.
 - notes and treatment, (28) 51.
 - studies, (37) 750; (38) 249; (40) 344.
- smuts in Barbados, (33) 445.
- soaked, feeding value, (39) 777.
- soaked, loss of nutrients from, (31) 357.
- soft or flour, (37) 799.
- soft, utilization, (38) 532, 571.
- soils in United States, (37) 799.
- spacing experiments, (33) 830; (40) 736.
- spoiled, relation to pellagra, (31) 858.
- spraying v. dusting, (32) 551.
- spurry seeds as coffee substitute, (40) 508.
- spurry, varieties of, (30) 399.
- starch content, (31) 828; (35) 108.
- statistical notes, (40) 626.
- steamed, composition and digestibility, (31) 467.
- storage, (34) 529.
- stored—
 - disinfection, (30) 849.
 - insects affecting, (31) 58, 353.
 - variations in weight of, (31) 235.
- stover—
 - amylolytic activity, (32) 503.
 - as feeding stuff, (35) 669.
 - ash analyses, (29) 861.
 - effect on bacterial activity of soils, (35) 216.
 - energy value, (33) 72.
 - feeding value, (40) 666.
 - for silage, (39) 272.
 - frozen, analyses, (36) 65.
 - silage, studies, (38) 270, 802.
- study of in Philippine College of Agriculture, (33) 597.
- subsoiling experiments, (28) 827; (31) 131; (33) 34.
- substitutes for pigs, (31) 868; (40) 668.
- sucker production in, (28) 537.
- suckering, (33) 34.
- suckering, cause, (26) 234.

Corn—Continued.

- suckers, economic value, (29) 31, 35.
- sucrose from, (34) 113.
- sugar content as affected by detasseling, (31) 44, 431; (32) 434; (33) 426; (34) 434; (35) 227.
- sugar, review of literature, (31) 409.
- supplements for pigs, (38) 473.
- sweet, *see* Sweet corn.
- tables for wagonloads, (32) 42.
- tassels as affected by soil conditions, (31) 831.
- temporary roots in, (35) 135.
- tester, homemade, description, (27) 491.
- textbook, (30) 635.
- thinning experiments, (33) 36.
- threshing machine for, (32) 134.
- transformation of nitrogen by, (29) 133.
- translocation of mineral constituents, (34) 427.
- transpiration, (36) 226; (39) 440, 517.
- transpiration and photosynthesis, (36) 525.
- trash compost, nitrogen content, (39) 523.
- treatise, (31) 331; (34) 529.
- use by prehistoric Americans, (38) 167.
- use of machinery in cutting, (39) 794.
- utilization of hydrocyanic acid by, (31) 730.
- utilization of sugar by, (36) 125.
- v. alfalfa hay for cows, (32) 74, 863, 871.
- v. barley for pigs, (40) 72.
- v. cane for silage, (31) 36.
- v. mangels for forage, (28) 41.
- v. oats for mules, (30) 772.
- v. oats for work horses, (37) 195.
- v. sorghum for forage, (35) 529.
- v. wheat for hens, (39) 74, 275.
- variation and growth in, (33) 28.
- variation in due to fertilizers, (29) 435.
- variations in, (39) 837.
- variegated pericarp in, (37) 737.
- varieties, (26) 233, 437, 535, 634, 733, 735, 828, 830, 834; (27) 32, 234, 334, 336, 529, 533, 637, 638, 736; (28) 230, 531, 533, 534, 734, 736; (29) 31, 32, 137, 138, 222, 225, 330, 335, 426, 429, 530, 631, 736, 737; (30) 37, 229, 231, 435, 525, 635, 734, 828, 829; (31) 133, 135, 226, 331, 430, 432, 525, 628, 629, 732, 828, 829; (32) 224, 226, 332, 333, 430, 431, 526, 527, 528, 529, 532, 630, 631, 730; (33) 33, 34, 35, 36, 430, 528, 529, 728, 828, 830; (34) 139, 227, 229, 431, 433, 434, 735; (35) 229, 337, 338, 339, 526, 828, 830; (36) 36, 131, 132, 135, 529, 735, 828, 829, 832; (37) 29, 32, 35, 227, 228, 229, 232, 233, 329, 330, 334, 436, 529, 531, 536, 636, 728, 730, 823, 824; (38) 31, 33, 131, 335, 336, 430, 431, 532, 632, 634, 828, 829, 830, 831; (39) 337.
- varieties—
 - acclimated, (40) 329.
 - for Arkansas, (30) 337.
 - for dry farming, (39) 736.
 - for Massachusetts, (28) 335.
 - in Ohio, (26) 437.
 - old Indian, (39) 738.
 - taxonomy, (40) 627.
 - tropical, (34) 306.
 - tropical, adaptations in, (39) 837.
- variety—
 - many-eared, (31) 525.
 - testing, methods, (26) 436.
 - tests, (39) 127, 227, 233, 336, 337, 338, 436, 437, 528, 737, 738, 835; (40) 31, 34, 228, 230, 328, 329, 331, 431, 523, 524, 624, 729, 823.
 - tests, experimental error, (39) 830, 831.
- viability and vigor as affected by position on cob, (34) 134.
- viability tests, (34) 145.
- water requirement in India, (27) 429, 432; (29) 826; (32) 127, 335; (33) 726; (34) 228, 720; (35) 529, 823; (38) 227, 228, 619.
- weather factor for, (35) 114.
- weevil—
 - life history and remedies, (28) 455.
 - on Gulf Coast, (40) 861.
 - remedies, (38) 768.
 - resistance in, (31) 354.
 - shuck protection against, (39) 862.
- weight ratios, (36) 131.
- white flint, development, (35) 336; (37) 529.
- wilting coefficient, (32) 335.
- wireworm—
 - habits and anatomy, (34) 556.
 - notes, (29) 252, 858; (32) 555; (35) 467.
 - slender, studies, (30) 545.
 - studies, (33) 63, 158.

Corn—Continued.

- worm, pink—
 - in New South Wales, (40) 453.
 - studies, (35) 256.
- worm, small pin, notes, (36) 56.
- xenia in, (28) 739.
- yield as affected by—
 - change of place, (38) 738.
 - climate, (28) 433.
 - detasseling, (26) 735.
 - ear characteristics, (27) 836.
 - hybridization, (32) 133.
 - number of stalks per hill, (33) 730.
 - removal of suckers, (26) 829.
 - source of seed, (27) 432; (32) 226.
 - sulphur, (34) 726.
 - tillage, (38) 815.
 - weather, (31) 213, 229; (35) 618; (38) 317, 319, 415; (39) 418.
- yield—
 - on alfalfa stubble, (33) 828.
 - per acre, 1866-1917, (40) 490.
 - per-acre unit v. score card for, (29) 633.
- yield, relation to—
 - nitrogen and phosphorus content of soil, (40) 316.
 - physical properties of soils, (33) 815.
 - temperature, (39) 319.
- yield tests, experimental error, (39) 829.
- yields, (26) 638; (29) 32; (34) 228; (40) 731.
- yields—
 - and prices, 1866-1915, (36) 832.
 - in Chester Co., Pennsylvania, (39) 621.
 - of fodder, (40) 330, 331.
 - of selected strains, determining, (39) 129.
- Cornaphis populi n.g. and n.sp., description, (31) 351.
- Corncob—
 - ashes, analyses, (26) 715; (40) 621.
 - meal, analyses, (26) 665.
 - rot, studies, (31) 642.
- Corncocks—
 - analyses, (27) 170; (38) 626.
 - effect on soil potash, (36) 625.
 - ground, analyses, (34) 665, 767; (38) 369.
 - ground, effect on soil phosphates, (34) 421.
 - use, (40) 17.
 - use in gas manufacture, (28) 115.
- Cornell University, notes, (26) 97, 300, 397, 797, 900; (27) 99, 198, 398, 493, 600, 699; (28) 94, 195, 397; (29) 98, 196, 398, 699; (30) 300, 497, 699, 797; (31) 197, 399, 497, 797; (32) 95, 397, 695; (33) 198, 795; (34) 198, 695, 900; (35) 97, 399, 798; (36) 695, 797; (37) 98, 498, 600, 898; (38) 499, 699; (39) 96, 300, 500, 697; (40) 199, 498, 697.
- Cornflower color, studies, (31) 324.
- Cornifrons elautalis, notes, (28) 451.
- Cornstalk—
 - beetle, notes, (34) 757.
 - beetle, rough-headed, life history and remedies, (38) 263.
 - borer—
 - European, notes, (40) 756.
 - larger, notes, (32) 449; (40) 856.
 - lesser, notes, (39) 765.
 - lesser, studies, (37) 851.
 - notes, (29) 356, 453; (37) 847; (39) 358.
 - studies, (39) 158.
 - summary of information, (40) 856.
 - disease, cause, (28) 284.
- Cornstalks—
 - effect on soil moisture, (26) 533.
 - feeding value, (38) 168.
 - formation of sugar in, (29) 409.
 - ground, analyses, (30) 868.
 - manufacture of paper and fodder from, (27) 314.
 - manufacture of sugar from, (28) 314, 810.
 - sugar content, (27) 314; (30) 14.
 - utilization, (28) 114.
- Cornstarch—
 - effect on intestinal flora, (36) 665.
 - gelatinization temperature, (37) 410.
 - hydrolysis, erythrodestrin in, (40) 460.
 - manufacture, (38) 266.
 - relation to polyneuritis, (29) 460.
- Cornus—
 - controversa as affected by ringing, (38) 128.
 - wood, use, (33) 443.
- Corollium n.g. and n.spp. in Norway, (31) 327.
- Coronilla minima, analyses, (33) 466.
- Corotoma trifurcata, effect on cowpeas, (40) 860.
- Corozo palm leaf spot, description, (39) 52.
- Corpus luteum—
 - effect on ovulation, (32) 671; (33) 96.
 - extracts, effect on cows, (29) 578.
 - function, (27) 174; (28) 571.
 - of pregnancy in swine, (40) 663.
 - of the fowl, studies, (40) 664.
 - pigments of, (31) 274.
 - substance, effect on growth and—
 - egg production, (34) 668.
 - sexual development, (34) 766.
 - supply of, (33) 86.
- Correlation coefficient—
 - computation, (40) 870.
 - discussion, (36) 166.
 - limitations and applicability, (37) 621.
- Correlation—
 - in farm survey data, (37) 269.
 - tables, formation, (27) 870.
 - theories for meteorology and agriculture, (36) 419.
- Corrosive sublimate—
 - absorption by potatoes, (29) 242.
 - as milk preservative, (32) 576.
 - as wood preservative, (30) 647.
 - effect on starch ferments, (27) 109.
 - for rye smut, (28) 647.
 - for seed grain, (28) 846.
 - for winter grains, (27) 351.
 - fungicidal value, (31) 242.
 - poisoning of live stock by, (34) 279.
- Corthylus punctatissimus, notes, (30) 357; (33) 252.
- Corticium—
 - calceum, notes, (28) 350.
 - javanicum, notes, (26) 851.
 - javanicum, studies, (27) 746.
 - laeve, notes, (27) 445.
 - lilacofuscum, notes, (35) 51; (36) 347; (39) 151.
 - ochroleum, notes, (35) 749.
 - salmonicolor—
 - notes, (27) 451; (28) 241; (29) 547, 749; (34) 448, 849; (35) 251; (36) 852; (38) 53, 759; (40) 155.
 - on fig, (39) 757.
 - or C. javanicum on rubber, (32) 54.
 - studies, (33) 151; (37) 52, 452.
 - treatment, (29) 552; (30) 845.
 - sp., notes, (27) 749; (28) 649.
 - spp. on rubber, (34) 744; (37) 253, 349.
 - stevensii n.n., description, (40) 49.
 - vagum—
 - notes, (34) 840; (35) 48.
 - pathogenicity, (32) 446.
 - studies, (37) 155; (40) 545.
 - vagum solani—
 - notes, (29) 647; (31) 344.
 - relation to sugar beet damping off, (33) 246.
 - studies, (32) 147.
 - treatment, (29) 242; (36) 47, 547.
- Corticiums, studies, (40) 48.
- Cortinarius n.sp., description, (31) 127.
- Cortinellus spp., culture in Japan, (35) 347.
- Corvus—
 - brachyrhynchus, notes, (30) 851.
 - corax europophilus n. sp., description, (39) 860.
 - frugilegus, feeding habits, (36) 354.
- Corylus avellana, monograph, (33) 540.
- Corymbites—
 - inflatus, notes, (32) 555.
 - noxius n. sp., description, (30) 856.
- Corynebacterium piriforme—
 - description, (29) 345.
 - n. sp., description, (30) 747.
- Corynespora—
 - mazei, notes, (30) 149.
 - melonis, description and treatment, (26) 448.
 - melonis, notes, (35) 246; (37) 248.
 - melonis, treatment, (35) 547.
- Coryneum—
 - beyerinckii—
 - description, (35) 654.
 - notes, (38) 50; (39) 850.
 - relation to citrus gummosis, (31) 449.
 - follicolium, inoculation experiments, (27) 651; (31) 150.
 - microstictum, notes, (31) 844.
 - modonium, notes, (29) 156.
 - modonium, studies, (33) 854.

- Coryneum**—Continued.
 mori n.sp., description, (35) 348.
 mori, studies, (27) 49.
 perniciosum, notes, (40) 160.
 spp. on trees and shrubs, (37) 250.
- Corynothrips stenopterus**—
 in Trinidad, (40) 649.
 n.sp., description, (31) 59.
- Corypha** sp., notes, (40) 44.
- Coryphodema tristis**, notes, (38) 465.
- Corythucha**—
 arcuata, notes, (26) 148.
 ciliata, negative geotropism of, (30) 357.
 ciliata, studies, (38) 359.
 essigi n.sp., description, (39) 559.
 gossypii on castor bean, (40) 453.
 monacha, notes, (36) 354.
 monacha, studies, (38) 858.
 parshleyi, notes, (40) 354.
 pergandei, notes, (40) 354.
 pura n.sp., description, (37) 849.
 spinulosa n.sp., notes, (39) 763.
 spp., notes, (26) 452.
- Coryza**, infectious, in fowls, (32) 783.
- Cosmetics**, treatise, (32) 162; (36) 63.
- Cosmophila**—
 erosa, life history, (38) 562.
 erosa, studies, (30) 157.
 sabulifera, notes, (27) 54.
- Cosmopolites sordidus**—
 life history and natural enemies, (35) 57.
 notes, (36) 158; (37) 161; (38) 164, 364.
 studies, (40) 266, 453.
- Cosmos**—
 bipinnatus, variation in, (35) 635.
 cut, preservation, (31) 837.
- Cossula magnifica**—
 notes, (38) 762.
 on pecan, (38) 157; (39) 557.
- Cossus**—
 larvae, resistance to cold, (37) 356.
 ligniperda, notes, (30) 455.
- Cost of living**—
 and the war, (40) 173.
 and wages, measurement, (40) 659.
 bibliography, (36) 762.
 factors affecting, (29) 595, 867.
 in Australia, (27) 165; (29) 362, 393; (32) 894; (33) 166.
 Baltimore, (32) 254.
 Bavaria, (29) 295.
 District of Columbia, (38) 769.
 France, (26) 595; (27) 193.
 Germany, (30) 559.
 industrial countries, (31) 261.
 Massachusetts, (37) 469.
 Mexico, (27) 665.
 New Jersey, (31) 659.
 New York City, (37) 670.
 New Zealand, (28) 863; (29) 295, 362.
 Nova Scotia, (30) 166.
 Paris, (28) 566.
 Portugal, (39) 191.
 Rhode Island, (39) 494.
 Scandinavia, (40) 561.
 State institutions, (40) 173.
 Union of South Africa, (40) 561.
 United Kingdom, (26) 894; (29) 766.
 United States, (37) 670.
 United States, control, (33) 787.
 various countries, (27) 269.
 Washington State, (33) 765; (40) 361.
 notes, (26) 662; (28) 762; (30) 666, 863.
 on farms, (37) 789.
 on Minnesota farms, (36) 790.
 reduction, (29) 463; (32) 662.
 regulation, (30) 258.
 relation to railroad rates, (29) 594.
 studies, (28) 662; (31) 462; (40) 462.
 treatise, (30) 559; (31) 360; (33) 694; (38) 392.
- Cost of production studies**, (40) 890.
- Costia necatrix**, notes, (26) 246.
- Cotalpa**—
 consobrina, notes, (33) 746.
 granicollis, notes, (35) 364.
- Cothonaspis (Eucoila) rapae**, notes, (33) 862.
- Cotinus nitida** larvae, fumigation, (40) 256.
- Cotoneaster acutifolia** as a hedge plant, (37) 241.
- Cottage cheese**, see Cheese.
- Cottages for rural districts**, (32) 687.
- Cotton**—
 abortion of fruiting branches, (28) 832.
 American, introduction into Sind, (34) 227.
 analyses, (31) 829.
 analyses and valuation, (30) 138.
 angular leaf spot—
 notes, (34) 643.
 studies, (35) 652; (36) 646; (37) 49.
 anthracnose—
 and bacterial spot, relation to weather, (36) 248.
 description and treatment, (29) 751.
 hot water treatment, (31) 643.
 notes, (28) 395; (31) 344; (35) 455; (39) 52.
 relation to weather, (40) 154.
 resistant varieties, (35) 348.
 studies, (26) 647; (27) 446; (28) 647; (30) 538; (32) 543; (36) 646; (40) 643.
 treatment, (34) 643; (38) 234.
 aphid—see also *Aphis gossypii*.
 control, (39) 870; (40) 256.
 notes, (32) 755; (33) 746; (34) 549.
 studies, (29) 355.
 Arizona-Egyptian, handling and marketing, (34) 338.
 arrangement of parts in, (26) 40.
 as affected by—
 low temperature, (31) 229.
 subsoil water, (26) 417.
 as preparatory crop for tobacco, (30) 341.
 as ratoon crop, (40) 328.
 bacterial disease, notes, (31) 136.
 bacterial spot, notes, (40) 154.
 bales, insects infesting, (26) 560.
 bark beetle affecting, (30) 660.
 beetles affecting, (38) 61.
 belt, climatic and edaphic factors, (39) 734.
 belt, climatic features, (40) 117.
 biennial cropping, (32) 226; (38) 430.
 boll—
 disease, notes, (37) 652.
 rots, methods of infection, (27) 246.
 rots, studies, (28) 647.
 soft rot, cause, (29) 749.
 boll weevil—
 Arizona wild, biology, (34) 656.
 Arizona wild, studies, (33) 257.
 biology, (26) 862.
 chain drag for, (34) 65.
 combating, (38) 233, 234.
 control, (27) 662; (28) 161, 456; (34) 163; (35) 554; (37) 359; (40) 237.
 control in Georgia, (35) 461.
 control in Sumatra, (29) 853.
 effect on farming, (35) 393.
 factors affecting development, (26) 253.
 feeding habits, (31) 458.
 hibernating in cotton seed, (34) 857.
 in Arizona, (30) 56.
 in Cuba, (32) 852.
 in Georgia, (37) 847; (38) 256.
 insect enemies, (27) 59.
 lead arsenate for, (40) 752.
 manual, (31) 457.
 monograph, (27) 562.
 movement in 1911, (27) 59.
 movement in 1912, (28) 757.
 new host plant, (40) 759.
 notes, (27) 554; (29) 251, 562; (30) 255, 636, 757; (31) 353; (32) 62; (35) 467; (40) 56, 553, 853.
 parasites of (26) 861.
 pink, notes, (34) 227.
 poisoning, (39) 767.
 problem, (40) 235.
 problem in Alabama, (27) 34.
 quarantine in Tennessee, (29) 653.
 regulations concerning, (30) 357.
 relation to temperature and humidity, (35) 52.
 studies, (33) 563; (35) 160, 161; (38) 62.
 substances attracting, (39) 411, 431.
 wild host plant of, (29) 458.
 "bollies," notes, (31) 832.
 bolls—
 dropping, (32) 49.
 fungus disease affecting, (26) 341.
 internal disease of, (38) 351, 352.
 supernumerary carpels in, (28) 832.

Cotton—Continued.

bollworm—

- and pink bollworm, relation, (40) 857.
- control, (26) 455; (27) 136, 433; (37) 729; (40) 256.
- description, (38) 460.
- Egyptian, studies, (37) 55.
- in Cyprus, (32) 754.
- in India, (38) 54.
- life history and habits, (32) 652.
- life history and remedies, (38) 261.
- new parasite of, (33) 159.
- notes, (27) 862; (28) 158; (29) 456; (31) 249, 252.
- on artichoke, (40) 58.
- on vetch, (39) 764.
- parasites of, (32) 156.

bollworm, pink—

- control, (26) 455; (32) 152, 449; (35) 257; (36) 756, 857; (38) 834; (39) 764.
- control by flooding, (37) 762.
- in Brazil, (38) 562, 765; (39) 659.
- Egypt, (30) 755; (35) 54.
- Mexico and Brazil, (37) 358.
- United States, (37) 762; (39) 465.
- life history and habits, (35) 854.
- notes, (27) 862; (29) 253; (34) 227; (38) 765; (40) 56, 167, 256, 263.
- origin, (40) 456.
- parasites of, (37) 569.
- rate of increase, (37) 762.
- seed treatment for, (39) 158.
- studies, (33) 655; (37) 564; (39) 158, 258, 465, 659, 764.
- treatise, (40) 856.

bollworm—

- predacious on alfalfa, (32) 58.
- scavenger, (37) 564.
- seasonal variation in, (32) 152.
- spiny, notes, (32) 847.

bolly refuse, (40) 366.

brachysm in, (32) 731.

branches, morphology, (28) 820.

breeding—

- and selection experiments, (33) 227.
- experiments, (27) 737, 837; (28) 634; (29) 31; (30) 232, 337; (36) 230, 646; (38) 336, 526; (40) 228, 527, 624.
- for disease resistance, (30) 331.
- for drought resistance, (40) 523.
- for higher oil and protein content of seed, (32) 111.
- monograph, (28) 634.
- review of investigations, (32) 40.
- studies, (26) 635.

broach, notes, (27) 35.

brunissure, description, (26) 546.

budding incompatible varieties, (40) 34.

bud-shedding, notes, (39) 637.

bugs, red and dusky, descriptions, (38) 460.

buying, suggestions for, (30) 527.

cake, undecorticated, analyses, (27) 670.

Caravonica—

- history, (38) 340.
- weevil affecting, (26) 351.
- yields, (35) 528.

caterpillar, remedies, (30) 456.

Cauto tree, culture, (33) 529.

club champions in 1913, (30) 399.

clubs in Arkansas, (33) 95.

composition at different stages of growth, (31) 433.

conference, West Indian, (36) 530.

consumption, 1906 to 1913, (31) 392.

cooperative experiments, (27) 430.

cost of production, (32) 434; (39) 294, 396; (40) 335, 390, 433, 527.

crinkled dwarf rogues, (37) 224, 732.

critical period of growing season, (39) 811.

crop mortgage credit in Texas, (32) 892.

crop of 1911, (26) 490.

cross-pollination, (30) 636.

crossing with other Malvaceae, (36) 804.

culture, (27) 340; (31) 630; (32) 132, 598; (33) 232; (34) 694; (35) 593; (36) 530, 593; (37) 36; (39) 834.

culture—

- and utilization, (33) 438.
- around the Mediterranean, (28) 433.

Cotton—Continued.

culture—continued.

- experiments, (26) 233, 436, 631, 735; (27) 433, 638; (29) 830; (30) 229, 232, 434, 632, 636, 734, 828; (31) 136, 226, 628, 733, 829; (32) 227; (33) 730, 830; (35) 827, 829; (36) 227, 830; (37) 330, 334, 635, 734; (38) 31, 230, 334, 335, 336, 430, 433, 526, 527, 635, 735, 829, 830; (39) 128, 433, 437, 632, 835; (40) 234.

culture experiments—

- in Barbados, (40) 434.
- Fiji, (40) 231.
- India, (40) 230, 332, 523, 625.
- Queensland, (40) 230.
- South Africa, (40) 524.

culture—

- in Algeria, (39) 234.
- America, (28) 433.
- Argentina, (37) 738, 823.
- Belgian Congo, (37) 830.
- Bengal, (26) 834.
- Bombay Presidency, (28) 595.
- Brazil, (37) 441; (38) 135.
- British India, (29) 534.
- British possessions, (31) 832.
- Burma, (29) 736.
- California, (37) 335.
- Cape of Good Hope, (29) 738.
- Ceylon, (28) 738.
- China, (26) 736.
- Dominican Republic, (31) 41.
- Egypt, (29) 431; (34) 227; (35) 137; (36) 36, 37.
- Egypt, treatise, (30) 527.
- Eritrea, (34) 227.
- French colonies, (37) 830.
- German colonies, (26) 332, 835; (34) 227.
- German East Africa, (31) 136.
- Greece, (34) 227.
- Guam, (37) 728.
- India, (27) 434; (28) 636, 736; (29) 431, 634, 736; (32) 131; (39) 229, 230; (40) 825.
- Italian Somaliland, (33) 433; (34) 227.
- Jubaland, (34) 227.
- Louisiana, (29) 534.
- Madras, (33) 131.
- Mexico, (32) 131.
- Nigeria, (34) 227.
- North Carolina, (27) 34.
- Nyasaland, (26) 829.
- Nyasaland and Uganda, (27) 217.
- Portuguese colonies, (34) 227.
- Russian Turkestan, (34) 227.
- San Joaquin Valley, (38) 740.
- Sind, (26) 834.
- South Africa, (29) 430.
- southern California, (40) 335.
- St. Vincent, (30) 636.
- the Orient, (28) 433.
- the Southwest, (29) 634.
- Uganda, (34) 227.
- various countries, (37) 891.
- West Indies, (32) 829.
- labor cost in, (34) 227.
- new system, (28) 832; (31) 433.
- on alkali soils, (32) 225.
- on Yuma reclamation project, (29) 226; (40) 433.
- relation to rainfall, (33) 117, 715.
- single-stalk, (32) 434; (33) 730, 830; (39) 534; (40) 235.
- treatise, (26) 535; (30) 831.
- under boll weevil conditions, (27) 640; (37) 359.
- under dry farming, (30) 435; (37) 329.
- under irrigation, (34) 229; (36) 133.
- curly leaf—
 - cause and treatment, (29) 751.
 - description, (33) 648.
- cutworm, notes, (33) 352.
- de Motril, history, (38) 340.
- depth of plowing tests, (40) 624.
- destruction by cockroaches, (32) 348.
- destruction by crawfish, (27) 551.
- disease in island of Nevis, (34) 542.
- disease in Uganda, (35) 45.
- disease, new, in India, (37) 454.
- disease resistance, (38) 533.

Cotton—Continued.

- diseases—
 - and insect pests, (38) 834.
 - bacterial, (32) 543.
 - in Barbados, (36) 540.
 - Brazil, (32) 238.
 - India, (33) 846.
 - Nigeria, (33) 741.
 - St. Croix, (32) 642.
 - St. Vincent, (39) 754.
 - Texas, (40) 154.
 - West Indies, (37) 452.
- notes, (26) 51; (27) 554; (29) 548, 749; (30) 351, 527, 538, 845; (32) 340; (40) 155.
- distance experiments, (29) 35; (30) 734; (31) 136; (32) 332, 735, 829; (34) 830.
- Durango, culture, (28) 833; (29) 36.
- Durango, culture in Imperial Valley, (34) 434.
- Egyptian—
 - as affected by soil variations, (28) 833.
 - branching habits, (27) 640.
 - culture, (28) 833.
 - culture experiments, (40) 433.
 - culture in Salt River Valley, (31) 41.
 - culture in Southwest, (29) 140; (34) 529.
 - deterioration, (31) 526.
 - factors affecting yield, (38) 338.
 - growing in Southwest, (26) 535.
 - heredity in, (34) 227.
 - historical and botanical study, (38) 533.
 - in America, (40) 438.
 - in Arizona, (39) 295.
 - maintenance of quality, (40) 628.
 - mutation in, (31) 525; (40) 237, 527, 628.
 - production and marketing, (29) 596.
 - seed selection, (30) 138.
 - studies, (26) 635.
 - varieties, (40) 628.
- electrical response in, (29) 27.
- exports, (34) 194.
- exports from United States, (38) 393.
- express, notes, (32) 735.
- factors affecting growth in Egypt, (30) 526.
- farm, producing home supplies on, (40) 292.
- farms—
 - management, (28) 199; (40) 299.
 - of Ellis Co., Texas, (39) 395.
 - surveys, (39) 293, 294, 395.
 - transferring into Japan clover fields, (26) 235.
- feeding habits, (31) 433; (34) 139.
- fertilizer experiments, (26) 232, 534, 631, 635, 736, 829; (27) 33, 34, 135, 234, 336, 429, 433; (28) 42, 230, 828, 832; (29) 31, 32, 35, 224, 335, 336, 736; (30) 636; (31) 38, 40, 136, 421, 432, 524, 628, 629, 630, 733, 829; (32) 37, 226, 227, 423, 526, 735; (33) 25, 32, 227, 830, 834; (34) 35, 139, 337, 512; (35) 135, 136, 323, 337; (36) 832; (37) 29, 215, 731, 732; (38) 33, 433, 517, 527, 533, 816, 832; (39) 21, 437, 528, 637, 817, 835; (40) 228, 230, 231, 235, 323, 515, 523, 624, 625, 627, 728.
- fertilizer formulas for, (31) 628.
- fiber—
 - from immature bolls, strength, (27) 136.
 - water absorption capacity, (37) 736.
- fibers—
 - fungus staining, (28) 847.
 - strength of, (29) 312.
- flowering and bolling records, (40) 628.
- following legumes and corn, (40) 829.
- forecasting ripening of, (31) 831.
- forecasting yield and price, (39) 191.
- fruiting processes, (40) 235.
- fumigated with hydrocyanic acid gas, tests, (35) 254.
- fungus diseases of, (26) 445.
- Futures Act, (35) 307, 698.
- Futures Act, rules and regulations, (32) 689.
- ginning, (36) 191.
- ginning—
 - cooperation in, (26) 535.
 - experiments, (29) 224.
 - reports, weather factor in, (37) 114.
- gins and warehouse law in Arkansas, (38) 294.
- grades, official, (28) 834.
- grading, (28) 137.
- grading and classification, (30) 433.
- grading, cooperation in, (33) 595.

Cotton—Continued.

- graphic summary of seasonal work, (39) 495.
- green manuring experiments, (37) 734.
- growers' organization, notes, (29) 894.
- growth—
 - as affected by fertilizers and soil humidity, (34) 337.
 - in shade, (29) 130.
 - on alkali soils, (27) 640.
- handling and marketing, (29) 430.
- handling and marketing in Imperial Valley, (37) 37.
- hybridization, (32) 829.
- hybridization—
 - and selection, (38) 336.
 - experiments, (26) 733; (30) 436, 525, 734; (31) 226, 525; (33) 132.
- hybrids, Mendelian inheritance in, (27) 837.
- improvement, (26) 534; (27) 533; (28) 736, 828; (38) 635.
- improvement—
 - by selection, (31) 41; (32) 135; (34) 227.
 - in Bombay Presidency, (33) 730.
 - in India, (39) 837.
- Indian—
 - Asiatic, notes, (27) 640.
 - factors controlling ginning per cent, (33) 529.
 - studies, (26) 736; (31) 526.
- industry in—
 - Antigua, (26) 733.
 - Barbados, (30) 636.
 - Egypt, (26) 390, 635.
 - German African colonies, (26) 41.
 - Grenada, (39) 738.
 - Hawaii, (27) 433.
 - India, statistics, (39) 739.
 - Leeward Islands, (30) 636; (34) 227.
 - Southern India, (30) 338.
 - United States, treatise, (26) 190, 332.
- inheritance—
 - in, (30) 337; (33) 834.
 - of bract teeth, (37) 732; (38) 532.
 - of oil in, (38) 533.
- inoculation experiments, (28) 426.
- insects affecting, (26) 553; (27) 53, 54, 340, 453, 454, 554; (28) 249, 555, 654; (29) 653, 756; (30) 356, 527, 546, 636, 752; (31) 58, 548, 649; (32) 340, 847; (33) 153; (34) 349, 539, 549, 652, 851; (35) 463, 657; (37) 460, 560; (38) 54, 61, 357, 834; (39) 160, 461, 556, 862; (40) 165, 256, 854.
- insects affecting in Sudan, (39) 160.
- internal boll disease, (39) 637, 754.
- irrigated, production in Southwest, (39) 837.
- irrigation, (39) 128.
- irrigation experiments, (28) 42, 588, 828; (30) 886; (31) 230; (35) 286; (36) 886; (39) 433; (40) 230.
- late cultivation, (40) 237.
- leaf blister mite—
 - dispersal, (36) 261.
 - in Barbados, (27) 60.
 - notes, (28) 752.
 - remedies, (38) 234.
- leaf—
 - caterpillar, outbreak in Peru, (29) 356.
 - cut or tomosis, notes, (29) 47; (31) 243.
 - dimorphism in, (26) 128.
 - diseases in St. Kitts, (34) 539.
 - miner, notes, (35) 657.
 - spot, angular, treatment, (38) 234; (40) 643.
 - spot, studies, (40) 346.
 - spots and mildew, notes, (38) 350.
 - worm in Brazil, (38) 54.
 - worm, notes, (26) 62, 351.
- leaves—
 - effect on soils, (32) 319.
 - formation of ascidia in, (34) 429.
 - nectar glands, (37) 727.
 - stomatal aperture, (27) 732.
- Lepidopterous enemies in Egypt, (27) 656.
- lessons for rural schools, (34) 293.
- lessons on, (32) 898.
- lightning injury, (33) 345; (40) 645.
- liming experiments, (29) 430; (32) 132; (40) 516.
- lint index, (39) 135.
- lint, length of, crops 1916 and 1917, (40) 34.
- loggerhead disease, description, (33) 648.
- long-staple, (35) 590; (40) 526.

Cotton—Continued.

- long-staple—
 - culture in North Carolina, (31) 41.
 - factors affecting production, (29) 140.
 - fertilization by bees, (40) 458.
- machinery, (36) 400.
- market—
 - conditions in Oklahoma, (30) 193.
 - prices and qualities, (36) 493.
 - review, (26) 835.
- marketing, (29) 894; (32) 91; (38) 834.
- marketing—
 - association, by-laws for, (34) 288.
 - cooperatively, (26) 535; (30) 591; (32) 435.
 - in North Carolina, (33) 595; (37) 36.
 - in the seed, (33) 793; (36) 289.
 - in the South, (26) 483, 489.
 - statistics, (33) 788.
- maturity as affected by fertilizers, (31) 39.
- Meade, (40) 237, 437.
- method of selfing, (39) 234.
- microscopical studies, (33) 210.
- mill operators, food raised by, (38) 792.
- mill picker dirt, analyses, (32) 32.
- mill waste, analyses, (38) 626.
- moth, *see* Alabama argillacea.
- native wild, notes, (29) 441.
- natural crossing in, (27) 837.
- new nematode infesting, (38) 147.
- of Cambodia, (32) 229.
- of Hopi Indians, description, (30) 37.
- of North Carolina, staple lengths, (39) 234.
- packing and marketing, (28) 433.
- perjurate hybrids, characteristics, (33) 132.
- pests in Egypt, treatise, (40) 856.
- photosynthesis in, (27) 732.
- physiological disturbances, (32) 543.
- picking—
 - effect on children, (30) 793.
 - machine, description, (27) 293, 792.
 - prices paid for, (40) 93.
- plant, chemistry of, (39) 411, 431.
- plant, glands of, (39) 431.
- planter, lister attachment for, (37) 90.
- planting and harvesting dates, (26) 532.
- planting for early maturity, (33) 133.
- prevention of cross-pollination, (40) 335.
- prices and movement in 1916, (37) 492.
- production—
 - and distribution, (40) 238.
 - and prices in United States, 1908-1918, (40) 93.
 - and utilization, (40) 333.
 - and weather, correlation, (33) 117, 715.
- in British Empire, (27) 34; (39) 837.
- Egypt, (40) 335.
- Louisiana, (40) 527.
- 1914, (32) 435.
- St. Vincent, (39) 835.
- United States, (26) 389; (27) 593, 738; (36) 230; (37) 441; (38) 740; (40) 391.
- 1918 program, (38) 834.
- propagation—
 - by slips, (30) 139, 337.
 - experiments, (29) 330.
- pruning experiments, (27) 136, 433; (32) 829.
- red spider affecting, (26) 153, 856; (27) 264; (29) 360; (32) 157; (36) 557; (38) 63.
- refuse, fertilizing value, (26) 631.
- region, meteorological service, (39) 718.
- Research Association, British, (40) 234.
- resistance to anthracnose, (26) 736.
- resistance to leaf blister mite, (37) 732.
- resources of French colonies, (40) 438.
- Rhizoctonia diseases, notes, (30) 845.
- root—
 - disease, notes, (38) 334.
 - knot, notes, (32) 342.
 - knot, treatment, (26) 846.
 - louse, notes, (31) 250.
 - louse, studies, (30) 546.
 - notes, (27) 237.
- root rot—
 - effect of rotation and tillage on, (35) 828.
 - notes, (29) 445; (31) 746; (40) 48.
 - studies, (36) 146; (39) 852.
- rotation experiments, (27) 234; (35) 135; (38) 334; (40) 729.
- rubelzul, description, (30) 37.

Cotton—Continued.

- rust—
 - investigations, (38) 752.
 - outbreak in Texas, (38) 149.
 - prevention, (29) 35; (32) 735.
 - treatment, (26) 736.
- Sakellardis—
 - in Montserrat, (30) 636.
 - notes, (27) 35.
- sampling, (39) 155.
- scale, Chinese, bird enemies of, (26) 556.
- Sea Island, (36) 530.
- Sea Island—
 - culture in Cuba, (26) 736.
 - culture in West Indies, (34) 227.
 - factors affecting yield, (39) 637.
 - fertilizer experiments, (40) 627.
 - improvement by selection, (34) 631.
 - lint characters, (38) 234.
 - price in 1913, (32) 229.
 - relation of lint length to rainfall, (40) 827.
 - selection experiments, (36) 332.
 - spacing, (40) 628.
- seed—*see also* Cottonseed.
 - analyses, (36) 804.
- seed as affected by—
 - storage, (29) 140.
 - sulphuric acid, (27) 524.
- seed—
 - as human food, (37) 60; (39) 870.
 - buying for planting, (31) 41.
 - calculator, (37) 137; (39) 441.
 - changes in during storage, (35) 412; (36) 12.
 - chemistry of, (32) 111.
 - composition, (36) 615.
 - composition and digestibility, (33) 568.
 - delinted, (40) 32.
 - detection of anthracnose in, (26) 648.
 - deterioration at public gin, (37) 335.
 - deterioration, relation to ginning, (33) 833.
 - digestibility and productive value, (37) 865.
 - distribution, (30) 436.
 - effect on maturity of cotton, (31) 40.
 - fertilizing value, (29) 831.
 - for planting purposes, (39) 135.
 - formation of oil in, (32) 427.
 - from dry sections, (40) 729.
 - fumigating experiments, (34) 458; (35) 257, 678.
- seed, germination—
 - as affected by green manures, (33) 331; (37) 29.
 - as affected by hot water, (31) 643.
 - tests, (26) 534; (31) 631; (39) 135.
- seed—
 - globulin from, (36) 804.
 - gossypol-like substance in, (38) 801.
 - heavy, selecting, (40) 237.
 - improving quality of, (29) 738.
 - internal disease of, (34) 645.
 - machines for treating, (39) 158.
 - moth, new, from West Africa, (33) 155.
 - position in planting, (40) 635.
 - pressure in warehouses, (34) 687.
 - production, cooperation in, (26) 535.
 - raffinase, content, (40) 171.
 - select, nurse planting, (39) 341.
 - selection, (31) 226, 433.
 - tests, (39) 135.
 - toxicity, (33) 311; (38) 685, 801.
 - transportation regulations, (30) 357.
 - treatment for pink bollworm, (36) 857.
 - valuation on dry matter content, (36) 92.
 - varietal characteristics, (36) 804.
- seeding experiments, (35) 828; (36) 36, 37.
- seedlings, insects affecting, (35) 156.
- selection, (30) 636, 735.
- selection experiments, (30) 525; (35) 134; (37) 335, 636, 732; (38) 33, 336, 433; (39) 337, 433; (40) 522.
- self-pollination in, (29) 36.
- serpentine leaf miner affecting, (29) 857; (33) 255.
- shedding, (30) 538; (34) 227, 643, 844; (36) 646; (37) 224, 553.
- shortage of the world, (40) 335.
- snapped and bolly, (40) 93.
- spacing experiments, (34) 229; (37) 734; (38) 832; (39) 739; (40) 235, 433.
- spinning and weaving tests, (38) 434.
- spinning tests, (30) 527; (35) 137; (40) 228.
- spraying for boll weevil, (34) 830.
- square-weevil, studies, (28) 161; (29) 658.

Cotton—Continued.

stainer—

- control, (40) 256.
- effect on germination of cotton seed, (26) 534.
- life history and remedies, (38) 461.
- muscid parasites of, (29) 358.
- notes, (27) 256; (37) 460, 550, 847; (39) 559, 635, 754, 862; (40) 165, 261, 854.
- on citrus, (40) 353.
- studies, (26) 454; (36) 654.
- West Indian, notes, (39) 559, 638.

staining, notes, (35) 44.

stalk cutter, description, (26) 95; (34) 163.

stalks—

- composition and use, (27) 727.
- conversion into charcoal, (32) 449.
- for cattle, (38) 371.
- plowing under, (38) 234.
- silage from, (38) 371.
- statistics in United States, (33) 894.
- stem borer, notes, (27) 53.
- stem weevil, notes, (40) 553.
- subsoiling experiments, (28) 827; (31) 131.
- substitute crops for, (32) 594.
- substitutes, notes, (26) 835.
- supply and distribution, (28) 390.
- thinning experiments, (35) 135, 337; (37) 29; (40) 433.
- topping experiments, (26) 233; (27) 433; (29) 35; (35) 135.
- trade, manual, (34) 595, 691.
- trade, treatise, (31) 690.
- treatise, (26) 437; (28) 631; (29) 738; (31) 525, 735; (32) 434; (33) 433; (35) 230, 639; (40) 526.

upland—

- chemistry of, (39) 411.
- classification, (37) 830.
- long staple, spinning tests, (31) 631.
- use and influence, treatise, (36) 894.
- use by prehistoric Americans, (38) 167.
- variation in, (38) 340.
- variation with a self-fertilized ancestry, (26) 834.
- varietal differences in fruiting processes, (40) 235.
- varieties, (26) 233, 535, 631, 733, 736, 828; (27) 35, 136, 337, 340, 433, 837; (28) 230, 533, 534, 828, 832; (29) 31, 32, 35, 426, 430, 534, 738, 830; (30) 229, 232, 338, 434, 525, 635, 731, 734, 831; (31) 133, 136, 432, 524, 525, 628, 631, 732, 733, 829; (32) 37, 226, 227, 229, 332, 526, 631, 734, 829; (33) 529, 834; (34) 830, 831; (35) 134, 135, 136, 830; (36) 735, 832; (37) 35, 329, 335, 636, 642, 728, 731, 823, 824, 825; (38) 31, 230, 233, 334, 336, 430, 433, 533, 634, 829, 830, 832; (39) 32; (40) 437, 438.

varieties—

- for weevil conditions, (40) 235, 236, 237.
- in Brazil, (37) 441.
- in Italian Somaliland, (37) 336.

variety—

- new and prolific, (33) 232.
- relation to oil content of seed, (40) 238.
- tests, (39) 128, 337, 433, 528, 637, 835; (40) 230, 231, 234, 237, 328, 332, 335, 433, 437, 523, 624, 625.

Verticillium albo-atrum on, (33) 244.

volunteering experiments, (32) 226.

warehouse law in Arkansas, (38) 294.

warehouses—

- accounts for, (37) 594.
- construction, (33) 784.
- in the South, (33) 191.
- regulations, (38) 895.

water requirement, (26) 631; (32) 127, 226; (37) 29; (40) 236.

wax, notes, (26) 114.

weather conditions for, (37) 316.

weevil resistance in, (26) 41.

weevils in Peru, (32) 658.

weevils, notes, (29) 562.

white scale—

- control, (28) 159.
- in Peru, (29) 654.
- parasites of, (26) 247.

wild—

- as host plant of cotton boll weevil, (30) 57.
- insects affecting, (31) 350; (33) 57.
- of Arizona, description, (31) 633.

Cotton—Continued.

wilt—

- and root knot, notes, (34) 643.
- notes, (28) 241; (29) 446; (30) 538; (31) 641; (32) 342, 543; (34) 50; (38) 351, 547.
- resistant strains, (40) 235, 237.
- resistant varieties, (28) 746; (35) 339; (38) 233.
- studies, (28) 746; (35) 846.
- treatment, (26) 846.

wireworm—

- notes, (32) 555; (35) 467.
- slender, studies, (30) 545.
- studies, (33) 63, 158.

worm—

- Egyptian, remedies, (28) 355.
- in Egypt, (30) 252.
- natural enemies, (27) 862.
- notes, (27) 554, 756; (34) 62.
- notes and remedies, (28) 60.
- remedies, (26) 757.
- studies, (27) 556.
- yield as affected by—
- rate of seeding, (27) 434.
- source of seed, (32) 226.
- water level, (30) 232; (31) 229, 230.

yield in relation to—

- density of stand, (33) 133.
- potash scarcity, (40) 335.
- yield under boll weevil conditions, (27) 34.
- yields, (29) 32.

Cottonseed—*see also* Cotton seed.

by-products, effect on composition of milk, (33) 274.

cake—

- agglutinating properties, (31) 774.
- analyses, (26) 767, 809; (27) 170, 371; (28) 464; (29) 367; (30) 169; (31) 863; (33) 665; (34) 169, 467; (36) 765; (37) 873; (38) 369; (39) 370; (40) 571.

cake, cold-pressed—

- analyses, (26) 468; (28) 464; (31) 863; (32) 169; (34) 169, 263, 467; (36) 268; (38) 369; (40) 72, 571.
- digestibility, (31) 863.
- for dairy cows, (35) 872.
- from bolly seed, analyses, (36) 765.

cake—

- digestibility, (38) 168.
- effect on composition of butter, (36) 875.
- effect on milk and butter, (34) 570.
- Egyptian, digestibility, (36) 765.
- feeding value, (26) 468.
- fertilizing value, (26) 631; (27) 337; (28) 42; (38) 220, 527.
- for cows, (29) 577.
- for range flocks, (39) 172.
- for sheep and steers, (29) 169.
- nutritive value, (28) 673.
- residual manurial value, (39) 530.
- v. cold pressed cottonseed cake for cattle, (34) 170.
- v. soy bean cake for cows, (29) 172.
- feed, analyses, (27) 669, 774; (28) 572; (30) 68, 565; (31) 366, 467, 564, 663; (32) 169, 666; (36) 268, 765; (37) 471; (38) 368, 369, 572; (39) 167, 270, 370, 773; (40) 72, 571, 665.
- feed meal, digestibility, (31) 766.
- flour as food for man, (31) 855.
- flour, use in bread making, (27) 268; (34) 762.
- hull bran, analyses, (32) 666.

hulls—

- analyses, (28) 169, 464; (30) 169; (32) 169; (34) 263; (36) 268, 615.
- composition and digestibility, (32) 666.
- detection in cottonseed meal, (30) 115; (33) 16.
- digestibility, (31) 863.
- feeding value, (39) 272; (40) 666.
- lintless, for cows, (38) 631.
- screenings, analyses, (26) 468.
- v. silage for steers, (31) 469; (32) 260, 568.

meal—

- acidity, (35) 770.
- amino acid in, (33) 665.
- ammonification, (34) 127.
- ammonification in soils, (33) 808.
- ammonification studies, (32) 817.

Cottonseed—Continued.
meal—continued.

analyses, (26) 72, 165, 266, 325, 362, 363, 369, 468, 469, 568, 665, 714, 728, 768, 770, 873; (27) 68, 170, 171, 371, 469, 570, 669, 670, 774, 775, 872; (23) 169, 224, 265, 364, 464, 465, 571, 627, 669, 769; (29) 270, 271, 367, 467, 570, 665, 769; (30) 67, 68, 169, 466, 467, 565, 671, 868; (31) 73, 168, 366, 467, 470, 564, 663, 863; (32) 169, 259, 568, 667, 862; (33) 71, 371, 568, 665, 759, 870; (34) 72, 169, 263, 371, 426, 467, 566, 665, 727, 767; (35) 373, 374, 562, 867; (36) 65, 167, 268, 571, 667, 765; (37) 220, 268, 471, 767; (38) 67, 368, 369, 376, 572, 665; (39) 70, 167, 270, 370, 773; (40) 72, 470, 571, 665.

analyses and valuation, (27) 423.

and feed, analyses, (32) 667.

and hulls, analyses, (29) 666; (32) 667.

as an incomplete feeding stuff, (36) 367.

as source of nitrogen, (26) 735.

as top-dressing for grains, (37) 29.

ash analyses, (29) 861.

availability in presence of sodium nitrate, (38) 723.

availability of nitrogen in, (26) 124, 523; (27) 723; (28) 724.

cold-pressed, analyses, (31) 863.

composition, (30) 466; (36) 615.

composition and digestibility, (32) 666; (33) 568.

decomposition in soils, (36) 116.

definition, (28) 98.

determination in feeding stuffs, (35) 504.

digestibility, (28) 464; (31) 863; (37) 65, 678.

digestibility in mixed rations, (34) 169.

distribution of nitrogen in, (36) 269.

meal, effect on—

activity of soil fungi, (36) 215.

breeding power of heifers, (34) 775; (36) 773.

butter, (39) 485.

calving ability of cows, (32) 98.

composition of milk, (33) 274.

composition of milk fat, (26) 170.

cows, (34) 279.

milk production and quality, (26) 476.

meal—

feeding, (29) 76.

feeding value, (39) 375, 478, 482, 676, 784; (40) 75, 278.

feeding value as affected by added hull bran, (32) 666.

fertilizing value, (27) 429, 434, 436, 437; (28) 832; (29) 335, 336, 831; (30) 636, 820, 835; (31) 40, 822; (34) 129, 219; (35) 531; (37) 731, 823; (38) 33, 517; (39) 21, 528, 623; (40) 515, 828.

food products, recipes, (31) 66.

for arid soils, (34) 621; (36) 726.

beef cattle, (32) 99, 865.

breeding animals, (39) 370, 372.

breeding ewes, (37) 676.

calves, (26) 879; (37) 675, 682.

corn, (32) 732.

dairy cows, (35) 871, 872.

egg production, (36) 769.

horses and mules, (37) 681; (39) 375.

human food, (31) 65, 264; (35) 469; (38) 166, 566.

laying hens, (30) 175; (33) 763; (36) 373; (37) 682; (38) 678; (39) 176, 376, 480, 578.

milk production, (40) 572.

pigs, (36) 471; (38) 370.

potatoes, (32) 739.

steers, (31) 469.

sweet potatoes, (33) 337.

forms of phosphorus in, (27) 611.

inositol phosphoric acid of, (36) 299.

inspection, (27) 219.

low-grade, analyses, (37) 168.

manurial value, (40) 127.

milling, (36) 615.

nitrification in acid soils, (30) 626.

nitrification in soils, (26) 722; (39) 814.

nitrogen determination in, (39) 506.

organic phosphoric acid of, (28) 505; (31) 707.

oxidation in soils, (34) 420.

palatability and nutritive value, (38) 66.

paper on, (28) 74.

Cottonseed—Continued.
meal—continued.

phosphorus compounds in, (29) 804; (37) 502; (40) 772.

physical changes during digestion, (39) 476.

phytic acid in, (30) 707.

production and use, (27) 327.

rations for steers, (28) 71; (29) 667.

relation to citrus chlorosis, (39) 458.

sugar content, (37) 208.

toxic properties, removal, (28) 279.

toxicity, (26) 780; (27) 78; (28) 197; (29) 76, 477; (31) 578; (32) 80; (33) 311; (34) 79, 381, 474, 476; (35) 333, 682; (37) 60, 689; (38) 282; (39) 174, 373, 478.

toxicity, neutralizing, (37) 680.

v. beef scrap for chicks, (30) 571; (31) 473.

v. coconut meal for cows, (30) 176.

v. soy-bean meal for cows, (32) 573.

v. velvet beans for cattle, (29) 576; (36) 563; (38) 680.

nut cake, feeding value, (39) 775.

oil, accessory growth substance in, (38) 265.

chemical and physiological tests, (33) 362.

composition, (32) 313.

content, relation to variety, (40) 238.

detection, (26) 508; (27) 207, 497; (29) 613, 798; (37) 13; (38) 616.

digestibility, (36) 830; (40) 268.

effect on composition of milk fat, (35) 775.

for calves, (29) 170, 668.

hardened, analyses and digestibility, (33) 564.

hydrogenated, digestibility, (34) 659.

hydrogenated, properties, (34) 9.

hydrogenation, (29) 413, 459; (34) 10.

hydrolysis and constitution, (27) 804.

industry, (36) 124.

production and use, (37) 511.

production in United States, (40) 614.

refractive index, (27) 614.

relation to pellagra, (26) 263.

role in glycogen formation, (31) 763.

soap as substitute for whale oil soap, (34) 250.

specific heat, (40) 68.

toxic effect on rats, (36) 61.

toxicity (30) 479.

products—

as fertilizers, (31) 323.

as human food, (36) 865.

composition and use, (38) 266.

products, effect on—

composition and properties of butter, (37) 72.

composition of milk, (38) 682.

milk, (31) 370.

texture and flavor of butter, (38) 683.

products—

fertilizing value, (39) 429.

for steers, (40) 873.

in northern Europe, (31) 864.

industry in United States, (26) 389.

methods of analysis, (30) 115.

mineral constituents, digestibility, (40) 769.

nutritional value, (40) 463.

of Texas, (33) 788.

toxicity, (39) 886.

toxicity, determination, (38) 113.

protein, nutritive value, (39) 666.

proteins, utilization, (26) 662.

waste, analyses, (28) 523.

Cottonwood—

analyses, (38) 309.

borer beetle parasite, (34) 66.

borer, studies, (36) 157.

change from radial to bilateral symmetry, (32) 426.

forcing experiments, (38) 443.

in Mississippi Valley, (30) 346.

leaf beetle, notes, (28) 353; (30) 154.

mite, new, (40) 359.

Cottony cushion scale—

in Ceylon, (38) 561.

in France, (34) 850.

notes, (27) 155; (29) 654; (30) 752; (31) 60, 751;

(32) 56; (33) 59.

parasite of, (36) 757.

remedies, (31) 157; (32) 152; (33) 725; (35) 852;

(36) 754.

- Cotyledon—
 fluid in study of anaphylaxis, (39) 79.
 orbiculata, toxicity, (29) 476.
- Couch grass, monograph, (29) 141.
- Coula edulis fruits and seeds, analyses, (35) 806.
- Coule cricket, notes, (37) 54.
- Coumarin—
 detection, (27) 112.
 determination in vanilla, (39) 505.
 disappearance in soil, (36) 725, 732; (38) 129.
 effect on—
 action of fertilizers, (26) 224; (27) 520.
 nitrification in soil, (33) 119.
 plant growth, (34) 126; (36) 212.
 wheat, (28) 139, 140; (34) 325; (35) 424.
 iodine addition product of, (36) 804.
 methods of analysis, (33) 413.
 toxicity as affected by phosphates, (28) 526.
- Country—*see also* Rural.
 church, social service, (40) 194, 390, 486.
 communities, social and civic work in, (32) 691.
 girls, treatise, (34) 290.
 homes, *see* Farm homes and Rural homes.
 life—
 advancement, New York State advisory board, (29) 99.
 and rural schools, treatise, (28) 692.
 bibliography, (33) 593.
 Club of America, (31) 298.
 clubs, (36) 595.
 clubs in Illinois, (32) 496.
 clubs, organization, (31) 96.
 life conference—
 at Iowa College, (31) 391.
 in Illinois, (27) 399.
 in Wisconsin, (26) 598.
 on, (34) 297.
 report, (39) 192.
 life—
 development, (35) 92, 794.
 development, Louisville conference, (30) 608; (32) 488.
 development, research and publicity in, (32) 102.
 education association in Montana, (33) 95.
 halls, notes, (26) 499.
 handbook, (36) 92.
 problems of, (36) 93.
 reader, (39) 299.
 school, Seaman A. Knapp, notes, (27) 200.
 treatise, (28) 687.
 week at Ohio State University, (34) 895.
 work at Ohio State University, (33) 190.
 planning, problems in, (37) 189.
 towns, treatise, (36) 258.
 v. city, (37) 593.
- Countryside and nation, (37) 593.
- County—
 agricultural schools, administration, (36) 691.
 boards of agriculture in New Jersey, (38) 594.
 experiment farm law, (29) 899; (34) 294.
 experiment farms—
 discussion, (32) 96.
 in Ohio, (28) 40; (31) 98; (36) 898.
 reports, (33) 828.
 fairs, uniform premium lists for, (33) 697.
 farm adviser, (33) 697.
 farm bureau, (31) 690; (37) 888.
 training schools for teachers in Wisconsin, (36) 690.
 training schools in Alabama, (36) 94.
- Cover crop—
 experiments, (40) 133.
 mixtures, tests, (28) 734.
 new, description, (31) 631.
- Cover crops—
 cost of sowing, (30) 333.
 culture in New Jersey, (38) 33.
 effect on nitrification in soils, (36) 118.
 fertilizer experiments, (28) 124.
 field tests in Philippines, (40) 229.
 for apple orchards, (34) 148.
 berries, (34) 294.
 citrus fruits, (27) 841; (34) 344.
 coconuts, citrus, etc., (33) 535.
 fall planting, (39) 532.
 Guam, (40) 328.
 orchards, (28) 47; (29) 147, 395; (30) 197; (32) 635; (33) 841; (35) 446, 447, 539; (36) 840; (37) 41, 833; (38) 244, 245, 346, 443; (39) 39, 445.
- Cover crops—Continued.
 for orchards and vineyards, (27) 743.
 Porto Rico, (34) 736; (39) 440.
 potatoes, (39) 755.
 young orchards, (33) 239.
 notes, (32) 332, 431; (34) 138.
 tests, (27) 736; (30) 441.
- Cow—
 barns—*see also* Dairy barns.
 construction, (27) 590; (36) 687.
 improved roof for, (27) 590.
 ventilation, (27) 590.
 champion dairy, (30) 272, 572; (31) 174, 372; (32) 368, 673; (33) 78, 275, 576; (34) 269, 472; (36) 473, 673.
 diseases, notes, (31) 380.
 fetus, comparative weights and composition, (32) 99.
 fetus, development, utilization of feed for, (37) 71.
 insurance—
 club in Great Britain, (30) 593.
 cooperative, in England and Wales, (28) 473.
 societies in England and Wales, (27) 473.
 kale, culture experiments, (39) 124.
 manure—
 analyses, (36) 120, 323; (38) 23; (39) 217.
 ashes, fertilizing value, (29) 228.
 bacterial content, (39) 181.
 manure, effect on—
 availability of phosphate, (27) 726.
 availability of potash, (29) 796.
 bacterial activity of soils, (35) 216.
 decomposition of green manure, (30) 325; (32) 514.
 nitrification, (29) 21.
 manure—
 fertilizing value, (27) 32; (31) 124; (40) 134.
 for greenhouse crops, (40) 741.
 solubility in milk, (39) 882.
 storage experiments, (37) 628.
 under open-shed system, (40) 178.
 sheds, construction and care, (32) 370.
 sheds, plans, (28) 86.
 shelters in Rhodesia, (36) 590.
 stables, open v. closed, (30) 676.
 stalls—
 construction and ventilation, (27) 190.
 description, (27) 793.
 homemade, (33) 90.
 lighting and ventilating, (38) 791.
 notes, (32) 590.
 testing association—
 high school, notes, (29) 299.
 in California, (28) 371.
 in Utah, report, (30) 177.
 testing associations—
 benefits, (37) 96.
 formation, (29) 578.
 formation and operation, (37) 474.
 in Canada, (27) 676; (29) 673; (30) 574.
 Denmark, (26) 169; (32) 871.
 Germany, (28) 472.
 Iowa, (28) 371.
 Ireland, (40) 673.
 Maryland, (32) 774.
 Minnesota, (27) 877.
 Nebraska, (27) 473; (38) 278.
 New Hampshire, (34) 472.
 New York, (26) 673.
 New Zealand, (26) 79.
 Norway, (30) 194.
 Sweden, (26) 476; (28) 473; (30) 776.
 Wisconsin, (28) 593, 895; (38) 293.
 notes, (28) 673; (29) 375; (30) 678; (31) 76; (32) 895; (39) 483, 677.
 organizing, (28) 775.
 textbook, (26) 169.
 value, (36) 195; (40) 375.
 testing—
 illustrated lecture, (38) 95.
 new plan for, (39) 678.
- Cowbane, spotted, eradication, (27) 733.
- Cowhage and related species, (37) 328.
- Cowpea—
 and hull chops, analyses, (36) 765.
 and sorghum silage, digestibility, (31) 863.

Cowpea—Continued.

- and sorghum silage, mineral constituents, (40) 769.
- beetle, longicorn, (40) 654.
- Cercospora disease, notes, (39) 453.
- diseases, descriptions, (30) 351.
- fly in Philippines, (40) 457.
- hay—
 - analyses, (31) 437.
 - ash analyses, (29) 861.
 - composition, (27) 668.
 - cost of production, (39) 294.
 - digestibility, (27) 669; (37) 168.
 - effect on bacterial activity of soils, (35) 216.
 - feeding value, (40) 667.
 - mineral constituents, digestibility, (40) 769.
 - v. alfalfa hay for dairy cows, (29) 876.
- leaf spot, notes, (35) 749; (39) 52.
- meal, availability of nitrogen in, (26) 124; (27) 723.
- plant louse, notes, (28) 653.
- pod weevil, notes, (37) 659.
- Rhizoctonia diseases, notes, (30) 845.
- root rot, notes, (29) 445.
- seed, half-grown, (39) 841.
- silage, analyses, (27) 469.
- vines, nitrification in soils, (26) 722.
- weevil—
 - biology and control, (39) 363.
 - control, (31) 256, 553; (37) 262; (39) 664.
 - in Hawaiian Islands, (40) 266.
 - injurious to cotton, (37) 560.
 - notes, (34) 754.
 - studies, (28) 256; (31) 254.
- wilt—
 - and root knot, notes, (34) 643.
 - description, (28) 346.
 - notes, (29) 444; (30) 538; (32) 543; (39) 52.

Cowpeas—

- amino acid in, (33) 665.
- analyses, (27) 68, 235; (29) 271.
- anatomical structure, (28) 660.
- and corn, associated growth, (33) 226; (35) 826; (37) 731; (38) 32; (40) 627, 729.
- kafir, silage from, (28) 734.
- sorghum mixture for hay, (39) 128.
- sorghum, sowing experiments, (28) 735.
- soy beans, comparative yields, (40) 330.
- as affected by—
 - barium and strontium, (40) 819.
 - bean leaf beetle, (40) 860.
 - calcium and magnesium, (35) 726.
 - guanidin, (28) 427.
 - pod position, (34) 134.
- as cover crop, (32) 332; (34) 736.
- dry-farm crop, (39) 736.
- forage crop, (31) 829; (37) 640.
- green manure, (32) 225, 423; (34) 230; (35) 337; (37) 320, 425; (38) 220, 230; (39) 423.
- preliminary crop for wheat, (38) 619.
- silage crop, (31) 829.
- ash analyses, (29) 861.
- Blackeye, as affected by salt, (40) 435.
- Blackeye, drought resistance, (39) 835.
- breeding experiments, (36) 646.
- breeding for disease resistance, (30) 331.
- color correlation in, (30) 656.
- color inheritance in, (26) 36.
- coloration of seed coat, (31) 130.
- colorations in, studies, (27) 632.
- cost of production, (33) 293.
- creatinin in, (26) 419.
- culture, (26) 830; (27) 32, 340; (30) 139, 232, 335; (31) 265; (32) 226, 431, 736; (34) 630, 694; (35) 231, 567.
- culture—
 - and use, (31) 832; (35) 33.
 - experiments, (26) 422, 632, 830; (27) 235, 735, 841; (29) 830; (30) 229, 434, 632; (31) 37, 829; (33) 31, 225, 229, 830; (34) 227; (35) 526; (36) 340; (37) 329; (38) 217, 334, 336, 632, 827, 829, 830; (39) 128, 835; (40) 624.
- in German East Africa, (27) 419.
- Guam, (40) 328.
- Hawaii, (40) 823.
- Illinois, (37) 438.
- Montana, (33) 526.
- North Carolina, (31) 132.
- Philippines, (26) 361; (30) 237; (36) 230; (40) 231.

Cowpeas—Continued.

- culture—continued.
 - in Porto Rico, (29) 631.
 - Rhodesia, (27) 32, 637.
 - the cotton belt, (32) 631.
 - Tucumán, (37) 134.
 - western Nebraska, (32) 224.
 - on Ozark uplands, (38) 217.
 - on Wisconsin drift soil, (36) 623.
 - under dry farming, (30) 435; (37) 329.
- disking v. plowing under, (33) 226.
- drilling v. broadcasting, (33) 33.
- effect on—
 - following wheat crop, (37) 732.
 - soil, (34) 420.
 - soil nitrogen, (26) 196; (31) 733.
 - yield of wheat, (35) 826.
- elongation of hypocotyl, (28) 39, 739.
- feeding value, (34) 867.
- fertilizer experiments, (26) 422, 426, 631, 830; (29) 829; (30) 820; (31) 829; (32) 819; (35) 428, 520; (36) 427; (38) 217, 517; (39) 421, 624, 728; (40) 218, 323, 624.
- fertilizing value, (32) 321, 629; (33) 227; (35) 125.
- field tests in Fiji, (40) 231.
- green, analyses, (30) 565.
- ground, analyses, (39) 167.
- growth as affected by manganese, (30) 823.
- growth on partially sterilized soils, (35) 515.
- hogging down, (35) 672.
- inoculation experiments, (37) 729; (40) 215.
- insects affecting, (27) 155.
- irrigation experiments, (40) 331.
- liming experiments, (28) 624; (32) 132; (36) 229; (39) 421, 729; (40) 126.
- New Era, selection experiments, (36) 230.
- nitrogen assimilation by, (33) 426.
- nitrogen distribution in, (36) 269.
- nodule bacteria of, (32) 327.
- notes, (26) 362; (28) 532.
- nutritive value and use in the diet, (29) 864.
- oil content, (27) 717.
- origin, (29) 229.
- perennial, analyses, (28) 463.
- plowing under, (38) 816.
- recipes, (38) 567.
- rotation experiments, (40) 729, 829.
- seed color variation in, (37) 334.
- seeding experiments, (38) 32.
- seeding with soy beans, (40) 829.
- serpentine leaf miner affecting, (29) 857.
- silage from, (39) 272.
- varieties, (26) 631, 828; (27) 335; (28) 735; (29) 31; (30) 229, 525; (31) 37, 829; (32) 226, 527, 736; (33) 32, 33, 229; (34) 228; (35) 337; (37) 235, 329, 330, 331, 439, 635; (38) 334, 336, 632, 827, 829, 830, 832; (39) 337.
- varieties—
 - catalogue of, (26) 635.
 - identification, (26) 635.
 - resistant to root knot, (27) 335.
 - variety tests, (39) 128, 434; (40) 32, 624, 729.
- water requirement, (32) 127, 226.
- wilting coefficient, (32) 335.
- yields, (31) 226.

Cowpox—

- complement fixation in, (34) 877.
- in horses, (38) 586.

Cows—see also Calves, Cattle, and Heifers.

- advanced registry—
 - milk and fat production, (38) 377.
 - statistical weighting for age, (36) 272.
 - tests, (40) 773.
- age as affecting production, (32) 575; (33) 97; (38) 176; (39) 381, 579.
- age as affecting value, (35) 891.
- age at first calving and milk production, (38) 74; (40) 178.
- aged, milk and milk fat of, (38) 578.
- alfalfa hay for, (30) 72.
- alfalfa v. clover for, (39) 578.
- apple pomace for, (26) 72.
- artificial fecundation of, (33) 71.
- as affected by—
 - alkali water, (30) 775.
 - cottonseed meal, (35) 871, 872.
 - environment and breeding, (35) 570.
 - extra care, (35) 873.
 - extracts of pituitary body and corpus luteum, (29) 578.

Cows—Continued.

- as affected by—continued.
 - gestation and parturition, (28) 885.
 - overfeeding, (35) 774.
 - underfeeding, (36) 669.
- assumption of male secondary characters by, (33) 369.
- Ayrshire, relation between amount and composition of milk produced, (29) 876.
- balanced rations for, (26) 774.
- balanced v. unbalanced rations for, (28) 174.
- barley for, (40) 878.
- body weight and milk yield, relation, (32) 267.
- bone growth, horn development, and performance in, (32) 266.
- breeding for high production, (29) 375.
- breeds and origin, textbook, (39) 881.
- Brown Swiss, milk production, (30) 572.
- cacti for, (31) 77; (33) 766.
- calving, fall and spring, milk yield of, (31) 770, 771.
- care and management, (29) 775, 876; (30) 678; (31) 272, 299; (36) 473.
- chopped alfalfa v. bran for, (39) 783.
- coconut meal for, (39) 676.
- competition, (35) 674; (40) 375.
- concentrated v. bulky rations for, (28) 174.
- conformation and milk yield, (28) 878; (31) 76, 573; (33) 78; (34) 379.
- conformation of, (26) 574.
- correlation between form and function, (29) 473; (30) 271.
- cost of feeding by breeds, (34) 181.
- cost of raising, (30) 472; (32) 574; (34) 472, 671; (38) 679.
- dairy breeds, (38) 376.
- "dairy temperament," (39) 279.
- difficult parturition in, (26) 381.
- digestion experiments, (26) 475; (30) 774; (38) 73; (39) 75, 381.
- dried yeast for, (33) 467.
- economy of production, (38) 277.
- effect of—
 - fatness on fat content of milk, (27) 280.
 - fetal growth on milk production, (29) 577.
 - work on milk yield and fat content, (30) 475.
- efficiency table, (37) 775.
- factors affecting development, (33) 274.
- factors affecting growth and dairy qualities, (34) 378.
- fattening, (33) 175.
- feed rations for, (31) 77.
- feed requirements, (27) 374.
- feed unit system for, (28) 74.
- feeding, (26) 273; (27) 877; (29) 276, 473, 575, 577; (32) 173; (33) 275, 673; (34) 269, 694; (35) 378, 674.
- feeding experiments, (26) 170, 266, 267, 273, 369, 467, 468, 476, 673, 879; (27) 280, 374; (28) 174, 175, 265, 363, 371, 372, 872, 877, 878; (29) 172, 277, 373, 374, 475, 575, 576, 774, 775; (30) 175, 176, 177, 375, 573, 576, 773, 774, 874; (31) 77, 173, 673, 771; (32) 68, 74, 168, 258, 265, 266, 367, 470, 573, 666, 672, 773, 871; (33) 77, 170, 174, 381, 382, 575, 674, 765, 766, 872; (34) 180, 181, 182, 269, 471, 663, 670, 671, 773, 774, 873; (35) 174, 481, 562, 571, 673, 871, 872; (36) 75, 173, 174, 273, 374, 571, 669, 765, 772, 871, 872, 875; (37) 75, 169, 171, 372, 682, 683, 766, 872; (38) 66, 73, 168, 174, 277, 375, 477, 571, 678, 680, 681, 778, 876; (39) 75, 381, 482, 575, 782; (40) 573, 672.
- feeding—
 - experiments in Denmark, (33) 174.
 - experiments, methods, (39) 380.
 - for milk production, (29) 577.
 - in summer, (30) 875.
 - in the South, (32) 574.
 - in winter, (30) 73.
 - standard for, (30) 774; (34) 670.
- fish meal for, (29) 270; (35) 769.
- floating ribs, (27) 175.
- forage crops for, (37) 599.
- genital organs and udder, bacterial flora, (39) 383.
- gestation and sterility in, (39) 279.
- gestation period, (28) 466; (33) 171.
- giving abnormal milk, detection, (26) 87.
- grain rations, (40) 574.
- grapevines for, (31) 72.

Cows—Continued.

- green alfalfa for, (39) 281.
- Guernsey, history, (40) 179.
- Guernsey, milk records, (40) 872.
- Guernsey, records of, (32) 774.
- handling, (32) 590.
- heat period and milk production, (40) 878.
- heating drinking water for, (28) 175.
- height measurement, (33) 274.
- high milk producing, notes, (34) 472.
- high milk producing, records of, (26) 476.
- high milk producing, sterility, (40) 374.
- Holstein-Friesian—
 - official tests, (40) 773.
 - 7-day tests, (40) 774.
- home-grown v. purchased feeds for, (36) 872.
- imported in New South Wales, (27) 277.
- improvement in Victoria, (36) 572.
- in Japan, (28) 370.
- in tick-infested regions, blood of, (26) 382.
- in United States, (28) 390; (31) 73.
- individuality, (26) 95.
- inheritance of milking qualities in, (26) 169.
- irrigated pastures for, (36) 173.
- Jersey and Holstein, economy of production, (38) 277.
- judging, (26) 597; (27) 375; (29) 577, 673; (36) 194, 473.
- Kerry and Dexter, milk and fat records, (37) 172.
- labor requirements, (36) 790.
- large v. small for milk production, (34) 773.
- leguminous feed for, (38) 681; (40) 374.
- lime requirements, (31) 864.
- maintenance requirements, (26) 475; (30) 773.
- maintenance standard, (31) 673.
- management on a small holding, (30) 90.
- measurements, (28) 873.
- metabolism experiments, (27) 775.
- milk flow as affected by dipping, (35) 873.
- milk production, *see* Milk production.
- milk vein system in relation to production, (38) 476.
- milking capacity, transmission, (32) 174.
- milking tests, (27) 676; (29) 373, 375; (32) 75.
- mineral metabolism, (35) 481; (36) 297; (37) 169; (38) 374, 779; (40) 373.
- mortality tables, (27) 375.
- newly lactating, detection, (31) 180.
- normal flora of genitalia, (28) 885.
- nutrients returned by, (38) 376.
- oestral period as affecting production, (39) 882.
- on general farms, (40) 574.
- on Para grass pasture, (40) 366.
- on pasture, concentrate feeding, (40) 877.
- open shed v. closed stable for, (30) 676; (34) 181, 182; (35) 571; (38) 277; (40) 177.
- osage oranges for, (36) 374.
- outer milk signs, (27) 675.
- parturition, diagnosing time of, (31) 876.
- pasturing, (40) 575.
- pasturing experiments, (37) 271; (38) 175; (39) 272, 474, 879; (40) 374.
- pasturing v. stable feeding, (37) 574.
- pine needles for, (28) 768.
- poisoning with box elder, (37) 80.
- protection from flies, (37) 260.
- protein requirements, (31) 173; (38) 74; (40) 572.
- pumpkins for, (38) 571.
- rations for, (30) 169; (36) 374; (37) 195, 684.
- records, *see* Dairy herd records.
- refuse brewers' yeast for, (33) 568.
- register-of-merit Jerseys, age factor in, (26) 166.
- register of production in Wisconsin, (39) 784.
- registration in Denmark, (30) 572.
- relation between milk and fat yields, (27) 574.
- resistance toward tubercle bacilli, (27) 383.
- respiration experiments, (39) 676.
- retained placenta, cause and treatment, (36) 675.
- rice-gluten meal for, (32) 266.
- rolled barley for, (39) 783.
- rutting, studies, (26) 367; (27) 672.
- salt requirement, (40) 775.
- school lessons on, (32) 494.
- score cards for, (28) 775; (37) 172.
- selecting by score card totals, (40) 872.
- selection and feeding, (29) 577.
- Shorthorn, cost of milk production, (39) 182.

Cows—Continued.

- silage crops for, (38) 174.
- slop-fed, milk from, (26) 370.
- soilage v. silage for, (27) 68; (30) 874; (34) 671.
- sterility and abortion in, (32) 82.
- sterility in, (36) 777; (37) 379.
- succulent feed for, (26) 574.
- sugar-beet tops for, (33) 169.
- sunflower silage for, (38) 74; (39) 182.
- sweet sorghum silage for, (39) 71.
- testing, (27) 375; (32) 575; (36) 773; (38) 74.
- testing in Argentina, (36) 673.
- testing, rules for, (34) 75, 182.
- tests of breeds, (30) 73.
- tests, one-v. two-day, (31) 871, 872.
- tests, 7-day v. yearly, (35) 481.
- tuberculous—
 - eradication, (28) 675.
 - relation to human health, (29) 382.
- udders, *see* Udder.
- urinalysis, (28) 81.
- utilization of protein and energy rations, (39) 75, 381.
- vegetable-ivory meal for, (36) 368.
- water requirements, (40) 774.
- water supplies for, (35) 189.
- watering, (38) 374, 680.
- wild onion poisoning, (40) 577.
- winter fodder for, (29) 577.
- wintering experiments, (28) 266.
- Wisconsin Register of Production, (40) 774.

Coyote—

- parasites, notes, (32) 185.
- proof pastures for sheep, (26) 73.

Coyotes—

- combating, (39) 59.
- host of spotted fever tick, (26) 64.
- relation to Rocky Mountain spotted fever, (27) 479.
- spreading disease among, (32) 480.

Crab apple—

- Amur, description, (30) 640.
- blight, notes, (34) 648.
- brown bark spot on, (39) 251.
- brown rot, studies, (31) 749.
- butter, artificial coloration, (27) 809.
- rust, notes, (40) 53.

Crab apples—

- breeding experiments, (39) 346.
- inoculation experiments with brown rot fungus, (33) 247.
- of upper South Carolina, (36) 140.
- seed production, (38) 245.
- varieties, (37) 142.
- varieties—
 - for Missouri, (40) 341.
 - for Oregon, (39) 241.
 - in Oklahoma, (27) 241.
 - new, (39) 346.

Crab grass—

- as affected by soil acidity, (40) 125.
- eradication, (27) 733.
- notes, (26) 361.

Crab louse, studies, (39) 764.

Crab, tarabagani, composition, (40) 171.

Crabs—

- as host of lung distome, (35) 384, 681; (36) 577.
- control, (39) 461.
- creatin and creatinin content, (31) 760.
- destruction of oysters by, (36) 853.

Cracker waste, analyses, (35) 562; (39) 773.

Crackers, examination, (27) 165.

Crambid moths, trap lights for, (37) 259.

Crambids—

- new, from United States, (37) 564.
- notes, (35) 659.

Crambinae—

- of North America, (40) 168.
- of Nova Scotia, (40) 57.

Crambus—

- caliginosellus, notes, (28) 158.
- caliginosellus, studies, (31) 253.
- hemiochrellus, studies, (40) 168.
- hortuellus—
 - notes, (28) 352, 854; (34) 756; (40) 753.
 - remedies, (26) 858; (30) 155.
 - studies, (38) 59.
- luteolellus, notes, (34) 752; (36) 856.

Cranberries—

- acidity, (32) 110; (37) 714.

Cranberries—Continued.

- apparatus for investigating nutrition of, (26) 196.
 - as affected by copper fungicides, (28) 247.
 - benzole acid in, (33) 15.
 - breeding experiments, (33) 637; (36) 443; (39) 749.
 - culture, (26) 841; (30) 643; (31) 742; (33) 736.
 - culture—
 - experiments, (28) 838; (30) 142; (31) 441, 740, 835; (33) 341, 342; (36) 43; (39) 47.
 - in Canada, (36) 240.
 - in Massachusetts, (36) 141.
 - in Wisconsin, (34) 42.
 - effect on composition of urine, (31) 761.
 - false blossom of, (31) 840; (36) 240.
 - fertilizer experiments, (26) 840; (28) 341; (30) 143; (31) 441, 741, 835; (32) 541; (33) 341; (34) 150, 834; (36) 44, 641; (37) 745; (39) 48, 748.
 - improvement, (31) 741; (35) 838.
 - insects affecting, (26) 840, 857; (28) 341, 352, 752, 854; (30) 154; (31) 752; (33) 351, 352; (35) 55; (36) 54; (37) 53; (38) 460; (39) 60; (40) 753.
 - irrigation, Skinner system, (28) 341.
 - liming experiments, (31) 442; (39) 48, 749.
 - pollination experiments, (26) 840, 858; (30) 143; (31) 741.
 - protection against frost, (26) 514; (31) 740; (33) 341; (36) 43.
 - root growth, (33) 341.
 - Scandinavian, desiccation, (32) 117.
 - seeds and seed oil of, (30) 803.
 - shipment, (39) 750.
 - spoilage, (39) 56.
 - spoilage after picking, (34) 252; (37) 745; (39) 749.
 - spraying experiments, (31) 741; (39) 55.
 - standard barrel for, (32) 499.
 - storage experiments, (30) 143; (36) 43; (39) 47, 749.
 - varieties, (28) 341.
- Cranberry—
- blight, cause, (33) 342.
 - blossom end rot, notes, (30) 143.
 - blossoms, fertilization, (28) 341.
- blogs—
- constructing and planting, (26) 841.
 - management, (27) 345.
 - natural fertility of, (28) 324.
 - of Wisconsin, frost and temperature conditions in, (26) 514.
 - protection against frost, (27) 509.
 - seepage water from, (31) 718.
 - temperature conditions in, (34) 715.
 - water supply, (39) 793.
- diseases—
- notes, (28) 341; (39) 55, 652.
 - studies, (26) 840; (33) 350; (36) 51.
 - treatment, (30) 143; (31) 740; (32) 52, 53.
- dishes, sugar substitutes in, (40) 67.
- end rot, studies, (38) 252.
- fireworm, notes, (28) 854.
- fruit rots, studies, (38) 454.
- fruit worm—
- notes, (34) 851.
 - remedies, (30) 154; (39) 60.
 - studies, (26) 857; (31) 433; (36) 54.
- fungus rots, studies, (39) 749.
- girdler, *see* Crambus hortuellus.
- industry, relation to Weather Bureau, (27) 539.
- leaf miner, notes, (34) 851.
- rootworm, remedies, (39) 60.
- rootworm, studies, (33) 456.
- rot, studies, (39) 56.
- soils, limed, Azotobacter in, (40) 214.
- spanworm, notes, (28) 854.
- spanworm, studies, (31) 453.
- storage rots, (40) 252.
- studies, (40) 150.
- tip worm, notes, (34) 851.
- tip worm, studies, (39) 60.
- toad-bug, studies, (31) 156.
- vinehopper, notes, (38) 559.
- worm, blackheaded, *see* Eudemis vacciniana.
- Crane flies—
- leaf-eating, life history, (40) 169.
 - notes, (28) 160.
 - of North America, biology, (32) 153; (33) 561; (35) 57.
- Cranes, North American, distribution and migration, (32) 55.
- Craponius inaequalis, *see* Grape curculio.
- Crataego-mespilus asnieresii, description, (27) 31.

- Crataegus**—
 inoculation experiments with brown rot fungus, (33) 247.
 mollis, after-ripening of seed, (28) 226.
 seeds, after-ripening studies, (29) 527.
 variability and hybridization in, (36) 630.
- Crater National Forest**, description, (26) 240.
- Craterellus cornucopioides**, composition, (30) 805.
- Cratopus punctum**, notes, (29) 858.
- Cratosomus sp.**, notes, (30) 657.
- Cratotechus hoplitis n.sp.**, description, (26) 63.
- Crawfish**—
 as crop destroyers, (27) 550.
 destruction, (27) 551.
 destruction in springs, (26) 654.
 studies, (27) 394.
- Cream**—
 acidity—
 as affected by neutralizers, (30) 75.
 relation to butter quality, (38) 281; (39) 679.
 relation to *Streptococcus lacticus*, (33) 675.
 studies, (32) 872.
- analyses, (26) 80, 171; (28) 178, 862; (30) 178; (33) 277.
 as affected by molds, (39) 785.
 Babcock test, (40) 378.
 bacteria, heat resistance, (39) 78.
 bacteria, studies, (39) 78.
 buying, permit system, (27) 179; (29) 879.
 cakes, poisoning due to, (31) 555.
 care and handling, (27) 676; (32) 576; (35) 99.
 care of, (29) 673, 674, 777.
 care on the farm, (29) 71, 463; (32) 473; (33) 80; (36) 674, 775.
 cheese manufacture, (27) 375.
 chemical and bacteriological standards, (27) 281.
 churnability, factors affecting, (29) 579.
 churning experiments, (30) 274.
 classification at New York, (27) 678.
 classimeter, description, (36) 875.
 clean, (28) 194.
 clotted, (39) 883.
 contests, (28) 176; (34) 874.
 contests, educational value, (26) 478.
 contests in Michigan, (39) 383.
 cooling, (29) 696; (34) 572; (35) 874; (39) 382, 679.
 cooling tanks, construction, (37) 591.
 cost of distribution, (38) 177.
 cost of pasteurizing, (31) 188.
 desiccated, composition, (28) 113.
 desiccated, methods of analyses, (28) 113.
 Devonshire "clotted," (33) 277.
 Devonshire, making, (27) 777.
 digestibility, (36) 860.
 effect on bacterial content of ice cream, (32) 660.
 examination, (34) 76.
 expansion of, (32) 471.
 fat content, determination, (27) 497; (33) 16.
 fat content, factors affecting, (26) 599; (29) 879; (33) 383; (37) 576.
 from sheep and buffalo milk, analyses, (27) 575.
 garlic flavor in, removal, (31) 771.
 grading, (27) 311; (32) 175.
 grading and improvement, (37) 592.
 grading and labeling, (36) 176.
 grading in Alberta, (29) 375.
 handling, (27) 778; (34) 79; (35) 176.
 homogenization, (29) 879; (36) 275.
 homogenization, device for, (27) 74.
 homogenized, for cheese making, (40) 576, 865.
 improvement, (28) 473.
 inspection, (28) 65.
 judging by score cards, (27) 74.
 law in Michigan, (30) 74.
 law in New Jersey, (35) 873.
 law in Pennsylvania, (27) 767.
 laws and regulations in United States, (33) 874.
 low-grade, notes, (27) 899.
 market, contests, (36) 774.
 market, of Iowa, (35) 572.
 marketing in Florida, (39) 282.
 marketing in the South, (32) 577.
 metallic flavor in, (35) 276.
 methods of analysis, (31) 114; (34) 713.
 neutralizing, (35) 277; (38) 281; (39) 384, 679.
 of tartar, crystallization in grapes, (30) 803.
 of tartar, deposition by wine, (30) 612.
 pasteurization, (27) 179; (28) 278; (30) 575; (35) 99; (37) 476; (39) 78; (40) 79, 81.
- Cream**—Continued.
 pasteurization—
 and aging, effects on viscosity, (40) 81.
 cost, (30) 75; (34) 380.
 for butter making, (33) 473; (34) 775; (36) 773; (37) 576; (38) 880; (39) 78, 785.
 paying for at cheese factories, (28) 278.
 paying for at creameries, (29) 375.
 powder, manufacture, (35) 678.
- preservatives—
 analyses and detection, (26) 806.
 detection, (31) 811.
 tests, (27) 777.
- production—
 and care, (32) 575; (33) 383.
 and grading, (37) 373.
 and inspection in New England, (34) 380.
 under spring conditions, (37) 273.
- receiving stations, (40) 870.
 regulations in England and Wales, (27) 678.
 regulations in United States, (35) 800; (36) 874.
 remade, (40) 802.
 ripened, bacteria in, (34) 672.
 ripening at low temperature, (31) 375.
 samples, care of, (28) 278.
 sampling, (27) 208; (29) 879.
 scales, accuracy, (28) 278.
 scoring, (35) 176.
 separation, (28) 371; (33) 695; (36) 571; (40) 415.
 separation, theory of, (28) 776.
 separator, description and tests, (27) 486.
- separators—
 care, (32) 576; (36) 674.
 description, (29) 390; (34) 891.
 distribution of bacteria by, (32) 268.
 notes, (27) 792; (30) 488.
 operation, (32) 874; (34) 891; (37) 576.
 tests, (28) 187, 385; (29) 88, 390; (34) 590.
- sour**—
 casein by-product of, (26) 81.
 of East Hungary, composition, (26) 171.
 viability of typhoid bacillus in, (32) 675.
- specific heat, (32) 715.
 standardization, (26) 275; (27) 879; (29) 777; (35) 378.
 sterilizing, (33) 473.
 storage, (32) 356.
 streptococci in, (28) 581.
 sweet, selling, (27) 179.
 tables for blending, (33) 577.
 testing, (27) 777; (28) 277; (29) 876, 879; (30) 74, 875; (31) 674; (32) 874; (36) 78, 674.
- testing—
 and grading, treatise, (26) 578.
 and handling, (32) 774.
 apparatus, notes, (27) 792.
 Babcock method, (30) 810.
 balances, tests, (35) 873.
 errors in, (26) 371.
 for fat, (39) 182.
 law, (28) 473.
 methods, (37) 618.
 utensils, inspection, (30) 178.
- tests, variations in, (33) 383; (36) 674, 775; (38) 280.
 transportation, (30) 74.
 unwhippable, cause and remedy, (28) 473.
 use of preservatives in, (27) 282.
 viscosity, (30) 179.
 yellow color in, (33) 175.
- Creameries**—
 accounting systems for, (37) 875.
 arrangement of machinery and cooling facilities, (27) 284.
 computer for, (31) 276.
 construction, (30) 89; (32) 839.
 cooperative, (33) 91.
 cooperative—
 in Minnesota, (32) 688; (38) 178.
 in Wisconsin, (28) 895; (32) 893; (38) 293.
 organization and management, (29) 674.
 organizing, (28) 775.
 Danish, skimming and churning in, (28) 776.
 expense items in, (29) 375.
 for southern farmers, (32) 577.
 Government operation, (40) 688.
 hot water for, (28) 892.
 in Ireland, (27) 375.
 Minnesota, (37) 777.
 Norway, (29) 897.

Creameries—Continued.

in Wisconsin, (30) 679.

Wisconsin and Minnesota, marketing practices, (39) 580.

inspection, (26) 868; (27) 879.

inspection in—

Canada, (36) 476.

Illinois, (36) 467.

Indiana, (32) 254; (36) 78, 773; (39) 884.

Maine, (28) 879.

New Jersey, (32) 254.

Virginia, (29) 766; (30) 74, 377.

management, (36) 275, 574.

management and plans, (31) 675.

milk fat losses in, (40) 377.

special products and by-products, (27) 179.

statistics in Canada, (38) 294.

use of fuel in, (29) 88; (40) 476.

water supply for, (29) 474.

Creamery—

and testers' license law, (33) 383.

college, financial statement, (27) 283.

equipment, operation, (32) 874.

experimental, at Grove City, Pennsylvania, (34) 498.

industry in Montana, (31) 675.

law in Indiana, (30) 576.

license division, report, (38) 281.

practice, compilation of articles on, (29) 777.

practice in Virginia, (29) 473.

practice, treatise, (30) 271, 275.

problems, (29) 879.

promoters, harm done by, (28) 775.

records, proposed system, (37) 75.

sewage, deodorizing, (28) 879.

sewage disposal, (31) 489; (32) 889; (34) 89.

waste sulphuric acid, use in superphosphate

manufacture, (40) 16.

waste water, purification and disposal, (31) 773

Creatin—

absorption experiments, (28) 664.

and creatinin in blood, (40) 274, 765.

and creatinin in milk, (40) 509.

and creatinin, studies, (39) 571.

as source of creatinin, (33) 69.

behavior during fatigue, (32) 764.

determination, (32) 505.

distribution in mammals, (31) 765.

effect on plant growth, (27) 621; (38) 324.

elimination during fasting, (30) 260.

excretion—

during starvation, (32) 257; (33) 663.

in carbohydrate starvation, (30) 864.

children, (26) 158; (31) 860; (38) 569.

blood, (39) 806.

blood of children, (35) 665.

foods, (31) 760.

meat extracts, (27) 498; (32) 299.

meat products, (29) 800.

muscle, (28) 865; (33) 13; (34) 507; (35) 664.

rabbit meat, (26) 563.

urine, (35) 207.

vegetable matter, (26) 420.

metabolism, (32) 764; (33) 566; (36) 161.

metabolism in dogs, (26) 565.

metabolism in growing pigs, (28) 269.

origin, (34) 507; (38) 869.

relation to animal metabolism, (31) 661.

studies, (26) 158; (35) 665.

Creatinin—

absorption experiments, (28) 664.

determination, Folin method, (31) 503.

effect on plant growth, (26) 420; (27) 621; (28) 324.

elimination and basal metabolism, relation, (32) 359.

elimination during fasting, (30) 260.

excretion—

as affected by meat feeding, (36) 264.

by pigs, (26) 364.

by women, (32) 256, 663.

during starvation, (32) 257.

on creatin-free diet, (32) 663.

formation by bacteria, (33) 725.

in blood of children, (35) 665.

foods, (31) 760.

legumes, (32) 560.

meat extracts, (27) 498; (32) 299.

meat products, (29) 800.

Creatinin—Continued.

in muscle, (32) 764; (33) 566.

plants, (33) 725.

starvation, (33) 663.

vegetable matter, (26) 420.

isolation from soils, (26) 419, 420.

metabolism, (32) 764; (33) 566.

metabolism in dogs, (26) 565.

origin, (34) 507.

origin in soils, (26) 419, 815.

preparation from creatin, (31) 503.

relation to animal metabolism, (31) 661.

source of, (33) 69; (35) 766.

studies, (26) 158; (35) 665.

urinary, relation to muscle creatin, (28) 865.

Creatinuria—

and acidosis, (40) 765.

in women, (39) 873.

studies, (40) 365.

Creatosin, studies, (30) 766.

Creeping bent grass, growth on volcanic ash, (32) 36.

Cremastogaster sp., notes, (31) 853; (35) 254, 365.

Cremastus—

hymeniae n.sp., description, (26) 352.

hymeniae, parasitic on beet webworm, (26) 250.

n.spp., descriptions, (38) 660.

Crematory for dead poultry, (30) 175.

Creolin as a disinfectant, (31) 383.

Creosote—

absorption by wood, (27) 846.

analyses, (26) 206; (36) 244.

as milk preservative, (31) 674; (32) 576.

pole preservative, (26) 644; (27) 148.

soil disinfectant, (31) 621.

wood preservative, (28) 344; (32) 841; (37) 886.

characteristics, (26) 206.

commercial, investigations, (27) 648.

effect of tar in, (39) 394.

effect on strength of timber, (28) 590.

evaporation, (26) 644.

examination, (34) 508.

from hardwood tar, (37) 114.

from piles, analyses, (27) 348.

insecticidal and larvicidal value, (34) 359.

methods of analysis, (26) 510.

oil—

as wood preservative, (27) 314.

efficacy in impregnated woods, (28) 844.

review of literature, (26) 206.

toxicity and volatility, (36) 711.

penetration of hardwoods by, (38) 892.

sulphonation test for, (26) 316.

toxicity to wood-destroying fungi, (37) 502.

volatilization after injection into wood, (26) 50.

Creosoted wood, disappearance of phenols from, (29) 111.

Crepidotus sp. (?) notes, (29) 152.

Crepis capillaris, description, (35) 642.

Crescograph, description, (32) 222.

Cresopton as a disinfectant, (31) 383.

Cresol—

as wood preservative, (27) 314.

commercial, toxicity, (38) 283.

determination, (28) 413.

effect on soil microorganisms, (31) 27.

emulsions, tests, (34) 780.

fungicidal value, (35) 208.

preservatives, determination in serums, (38) 316.

preservatives, preparation, (38) 378.

sterilization of soils by, (32) 816.

Cresoltyrosinase, notes, (28) 503.

Cress—

as affected by formaldehyde, (26) 731.

diseases, notes, (30) 647.

electroculture experiments, (30) 430.

fertilizer experiments, (30) 821.

induced semiparasitism in, (29) 629.

insects affecting, (28) 352.

seeds, disinfection experiments, (31) 738.

Cricket—

big brown, notes, (28) 249.

coulee, notes, (37) 54.

coulee, remedies, (35) 756.

dark brown, injurious to plants, (38) 761.

Crickets—

destruction, (27) 358.

in Nova Scotia, (40) 856.

Crickets—Continued.

- in South America, (37) 157.
- injuriously to *Kleckia* rubber, (30) 752.
- injuriously to potatoes, (37) 157.
- Criconea* n.g. and n.spp., descriptions, (35) 460.
- Cricula andrei*, habits, (27) 456.
- Criocephalus rusticus*, injurious to timber, (29) 858.
- Criocerinae*, catalogue, (30) 458.
- Crioceris*—
 - asparagi*, see *Asparagus* beetle.
 - duodecimpunctata*, see *Asparagus* beetle, twelve-spotted.
 - melanopa*, injurious to cereals, (28) 653.
- Criptocephalus commutatus*, notes, (28) 855.
- Crisco*, analyses, (27) 165.
- Cristatithorax*—
 - laticapax* n.sp., description, (37) 59.
 - pulchra* n.g. and n.s.p., description, (26) 254.
- Crithidia*—
 - euryophthalmi* n.s.p., studies, (39) 559.
 - fasciculata* in hibernating mosquitoes, (30) 757.
 - gerridis*, pathogenic to warm-blooded mammals, (33) 862.
 - hyalommae*, studies, (30) 460.
 - leptocercis*, morphology and life history, (34) 858.
 - melophagi*, relation to sheep's blood, (26) 760.
- Crocus*—
 - bulbs as food, (32) 855.
 - sativus, analyses, (33) 466.
- Croesus castaneae* n.s.p., description, (34) 456.
- Cronartium*—
 - asclepiadeum*, hosts of, (31) 540.
 - cerebrum*—
 - n.comb., studies, (31) 445.
 - notes, (39) 859.
 - on Norway pine, (38) 854.
 - coleosporioides*, hosts, (39) 548.
 - comandrae* and *Peridermium pyrifforme*, identity, (34) 539.
 - comptoniae*, notes, (30) 653; (37) 845; (38) 455.
 - occidentale* n.s.p., description, (39) 859.
 - pyrifforme*, investigations, (33) 448.
 - pyrifforme*, pycnia of, (37) 558.
 - quercus*, notes, (31) 348, 445.
 - quercus* on jack pines, (33) 351.
 - quercuum* and *Peridermium harknessii*, association, (34) 849; (36) 454, 746.
 - quercuum*, relation to *Peridermium cerebrum*, (26) 57.
- ribicola*—see also White pine blister rust.
 - arthropod and gasteropod carriers, (39) 248.
 - control in New York, (37) 846.
 - diagnosis, (38) 356.
 - dissemination by gipsy moth larvae, (38) 860.
 - in New York, (36) 53.
 - inoculations on *Ribes*, (38) 151.
 - mycelium of, (37) 757.
 - notes, (26) 651; (27) 253; (29) 547, 649; (30) 745, 849; (31) 451; (35) 551; (38) 254, 355.
 - notes and treatment, (29) 249.
 - overwintering, (31) 54; (37) 845, 846.
 - parasite of, (34) 751.
 - production of internal telia, (36) 845.
 - spore distribution of, (31) 647.
 - threatening Pacific States, (34) 354.
 - treatment, (31) 50, 346; (32) 842.
- spp., inoculation experiments, (38) 253.
- spp., notes, (30) 148; (33) 351.
- spp., pycnial stages, (38) 253.
- spp., spore germination, (38) 225.

Crop—

- adaptation in relation to climate, (40) 18.
- census in Nebraska, (40) 194.
- centers of United States, (39) 734.
- damages in 1909 and 1910, (26) 190.
- diseases, notes, (28) 645.
- distribution, relation to seasonal rainfall, (39) 511.
- estimates, value and accuracy, (40) 592.
- forecasts in India, (36) 689.
- growth as affected by fertilizers, (34) 517.
- growth, relation to weather, (28) 115.
- improvement in India, (40) 825.
- mortgage system in Texas, (30) 591.
- pest law of West Virginia, (28) 842.
- plants, nitrogen relations, (40) 821.
- plants, past and present climates, (40) 616.

Crop—Continued.

- production—
 - at high altitudes, (39) 810.
 - cooperation in, (30) 792.
 - cost in Ohio, (40) 292.
 - effect on nitrification in soils, (31) 119.
 - factors affecting, (26) 422; (35) 624.
 - for 1919, (40) 487.
 - in Algeria and Tunis, (40) 594.
 - Germany and America, (28) 294.
 - Ireland, (34) 291.
 - Saskatchewan, (38) 594.
 - Switzerland in 1916, (38) 91.
 - maintenance, (32) 14.
- production, relation to—
 - meteorology, (28) 198; (29) 314.
 - soils, (26) 434; (29) 416.
 - temperature and rainfall, (26) 415; (28) 716; (38) 208.
- production—
 - textbook, (32) 393.
 - transpiration in, (35) 823.
 - variations, effect on prices, (35) 496.
- records, methods of keeping, (27) 142; (28) 536.
- reports, (26) 94, 190, 490, 595, 689, 897; (27) 296, 392, 489, 692, 895, 896; (28) 90, 295, 489, 595, 690, 791, 896; (29) 190, 296, 896; (31) 95, 190, 391, 789; (32) 90, 287, 490, 594, 689, 893; (33) 93, 192, 295, 395, 594, 788; (34) 91, 290, 392, 595, 690, 896; (35) 91, 192, 393, 590, 684; (36) 92, 193, 392, 689, 894; (37) 92, 191, 392, 697, 891; (38) 91, 294, 393, 596, 695, 793; (39) 90, 192, 296, 497, 594, 796, 895; (40) 93, 293, 391, 490, 594, 792, 894.
- reports in Nebraska, (37) 291.
- residues, analyses and use, (34) 519.
- residues, fertilizing value, (32) 319.
- rotation, see Rotation.
- safety on mountain slopes, (29) 414.
- statistics, (30) 594.
- statistics—
 - in Denmark, (31) 390.
 - Missouri, (36) 689.
 - Philippines, (26) 318.
 - on reclamation projects, (37) 92.
- surveys, importance of, (31) 225.
- surveys, relation to soil surveys, (26) 434.
- systems, relation to temperature and rainfall, (26) 415.
- yields—
 - analysis, (38) 338.
 - and prices, (31) 295; (32) 191.
 - as affected by late spring, (37) 316.
 - as affected by subsoling, (30) 121.
 - as guide to fertilizer use, (35) 215.
 - forecasting, (36) 209.
 - in Illinois, (37) 214.
 - in Selby smoke zone, (35) 213.
 - in United States, (31) 895.
 - increased, causes of, (30) 133.
 - increasing for war needs, (39) 21.
 - increasing in Gulf Coast region, (40) 133.
 - increasing in Kentucky and Tennessee, (40) 133.
 - per acre, change from year to year, (40) 490.
 - per acre in India, (40) 894.
- yields, relation to—
 - available plant food in soils, (29) 623.
 - bacterial activities in soils, (31) 121.
 - cropping system, (35) 29.
 - physical properties of soils, (33) 815.
 - rainfall, (34) 319.
 - weather, (34) 415.
- yields, tests, experimental error, (39) 829.
- zones of New Mexico, (29) 755.

Cropping—

- continuous, effect on soils, (28) 120.
- effect on soil moisture, (29) 211, 425.
- system, continuous, (40) 589, 590.
- systems—
 - adaptation to soils in New Jersey, (40) 19.
 - and climate, correlation, (34) 603.
 - climatic control, (38) 414.
 - effect on soil moisture, (40) 429.
 - effect on soil nitrate, (40) 419.
 - for Arkansas, (40) 133.
 - for Middle Atlantic coastal plain, (38) 816.
 - for Washington, Oregon, and Idaho, (38) 824.
 - relation to meteorology, (28) 198.

Crops—*see also* Field crops, Forage crops, and *specific crops*.
 absorption of plant food by, (31) 617.
 and fertilizers, treatise, (27) 218.
 and soils, textbook, (30) 695.
 animals affecting, (30) 649.
 as affected by—
 climate and soils, (33) 825.
 lead nitrate, (26) 225.
 other crops, (31) 627.
 radioactive earth, (33) 123.
 choice of, (34) 694.
 composition as affected by irrigation, (28) 130, 332.
 cost of production, (26) 398; (32) 688, 791; (37) 190, 595, 790.
 cost of production—
 determination, (38) 89.
 in California, (37) 890.
 critical period of growing season, (39) 810.
 culture—
 at high altitude, (37) 437.
 experiments, (28) 147.
 in Brazil, (29) 428.
 in California, (37) 890.
 in Germany, (30) 525.
 drought-resistant and water tolerant, (40) 891.
 dry-land, water economy, (27) 531.
 effect on—
 drainage water, (26) 619.
 each other, (40) 135, 623.
 nitrification in soils, (35) 321.
 nitrogen content of soils, (38) 213.
 soil bacteria, (37) 421.
 emergency, for overflow lands, (27) 337.
 feeding of, treatise, (34) 326.
 fertilizer ingredients removed by, (26) 422.
 fertilizer requirements, (28) 722; (31) 217, 820; (32) 620.
 fertilizing with carbon dioxide, (28) 728.
 field experiments, standardization, (39) 829; (40) 823.
 food requirements of, (31) 215.
 food value per acre, (38) 292.
 for Arizona, (37) 209.
 for dairymen, (33) 97.
 for sandy, alkali, and hill lands, (40) 891.
 foreign, statistics, (26) 190, 491.
 graphic summary of seasonal work, (39) 495.
 growing under glass, (26) 391.
 growing without potash, (33) 325; (37) 218.
 growth as affected by alkali, (36) 118.
 hand chart of, (33) 429.
 handbook, (30) 133.
 harvested, analyses, (29) 119.
 hoed, methods of variety testing, (26) 436.
 hogging off in the corn belt, (32) 192.
 identification of varieties, (26) 434.
 improvement, (28) 827; (34) 735.
 insects affecting, (27) 453, 552.
 insurance against fire, (37) 888.
 insurance against hail in France, (26) 388.
 intertilled, tractors for, (26) 398.
 irrigated, costs and seasonal distribution of labor, (40) 388.
 laboratory manual, (36) 692.
 laboratory material, (30) 394.
 large v. small, in relation to prosperity, (31) 191.
 loss in weight after harvesting, (38) 635.
 marketing, (28) 894; (36) 91.
 mutual influence in relation to nitrogen, (32) 515.
 new, for Rhodesia, (40) 333, 825.
 of India and the East, diseases, (40) 47.
 of southern France, Algeria, Tunis, and Morocco, (39) 437.
 oil producing, fertilizer experiments, (26) 129.
 plant food combinations for, (26) 622.
 plant food removed by, (40) 429.
 prices in Ireland, (31) 96; (32) 594.
 relation to—
 rainfall, (33) 715.
 temperature, (39) 615.
 relative unilateral impoverishment of soil by, (39) 724.
 school lesson on, (32) 597.
 sulphur requirements, (26) 726.
 textbook, (28) 298.

Crops—Continued.
 toxic effect of copper on, (37) 527; (38) 28.
 treatise, (28) 632.
 utilization of phosphates by, (31) 823.
 vegetatively propagated, selection in, (26) 434.
 water requirements, (28) 321, 537; (30) 34; (32) 127; (34) 306; (35) 633.
 yield as affected by irrigation, (28) 132.
 Cross—
 arms, tests, (27) 443.
 breeding, variations under, (34) 864.
 pollination, effect on plants, (29) 339.
 vine, notes, (27) 346.
 Crossing-over, mechanism of, (35) 866.
 Crossties—
 identification of wood, (38) 645.
 industry in Canada, (37) 245; (38) 147.
 industry in 1915, (37) 838.
 industry in United States, (30) 845.
 preservation, (30) 845; (33) 544; (37) 748.
 service tests, (36) 46.
 woods suitable for, (36) 46.
 Crotalaria—
 as green manure, (37) 320.
 burkeana, notes (26) 882.
 candicans, culture experiments, (37) 131.
 Colletotrichum sp. on, (39) 453.
 diversistipula, analyses and digestibility, (27) 871; (32) 167.
 grandibracteata, insects affecting, (28) 555.
 juncea—
 as green manure, (30) 339; (31) 230, 722; (36) 232.
 culture and improvement, (28) 633.
 nodule formation, (38) 528.
 notes, (27) 36.
 seed position in planting, (40) 635.
 retusa—
 analyses, (26) 126.
 culture, (34) 736.
 culture experiments, (27) 233.
 saltiana—
 fertilizing value, (32) 722.
 notes, (40) 44.
 seeds, germination experiments, (31) 230.
 spp. as green manure, (30) 324.
 spp., culture experiments, (35) 528.
 spp., fertilizing value, (34) 34.
 striata, analyses, (29) 215.
 striata as green manure, (38) 220.
 usaramoensis as green manure, (38) 637.
 vitellina, analyses, (31) 863.
 Crotin—
 and its antitoxins, (32) 78.
 occurrence in locust seeds, (30) 204.
 Croton bug—
 as factor in bacterial dissemination, (30) 250.
 destruction, (33) 558.
 Croton gratusimus, analyses and digestibility, (27) 871; (32) 167.
 α-Crotonic acid, studies, (36) 12.
 Crotons, food plant of purple scale, (26) 756.
 Croupous enteritis in cattle, notes, (28) 886.
 "Crowa" fiber, tests, (31) 526.
 Crowdy for cows, (29) 172.
 Crowfoot, habits and eradication, (37) 542.
 Crown gall—
 as affected by X-rays, (39) 453.
 chemically induced, (38) 648.
 inoculation experiments, (28) 447.
 nature and cause, (28) 446.
 notes, (31) 449, 746; (40) 844.
 of fruit trees, notes, (29) 348.
 relation to cancer, (35) 545, 650; (37) 245.
 resemblance to human cancer, (26) 646.
 structure and development, (27) 649.
 studies, (29) 45; (35) 244, 645; (36) 541, 747; (38) 752, 852.
 Crown rot, studies, (28) 347.
 Crows—
 damage by, in Denmark, (26) 452.
 economic status, (38) 856.
 notes, (30) 851.
 relation to anthrax, (30) 780.
 relation to hog cholera, (30) 285.
 roosts, winter, (35) 156.
 subspecies in Colorado, (40) 853.
 Crucianella maritima, analyses, (33) 466.

- Crucifer—
 bacterial wilt, notes, (37) 150.
 cakes, toxicity, (26) 567.
 club root and gall weevil injury, (33) 648.
 club root, notes, (27) 349; (36) 349.
 diseases, treatment, (33) 848.
 Phoma disease, notes, (37) 248.
 rots, notes, (40) 844.
- Cruciferae, tokra disease, (39) 146.
- Crucifers—
 culture, (32) 337; (33) 238.
 disease resistance in, (33) 52.
 finger-and-toe disease of, (31) 148.
 root louse injury, (40) 60.
 susceptibility to cabbage club root, (28) 547.
 wild and cultivated, hybridization, (36) 130.
- Crude fiber, *see* Cellulose.
- Crumenula—
 abietina n.sp., notes, (30) 453.
 pinicola, notes, (28) 750.
- Crustacea, injurious to coconuts, (27) 857.
- Crying, effect on respiratory exchange in infants, (26) 766.
- Cryoscope, description, (33) 414.
- Cryphalinae, classification, (32) 758.
- Cryphalus n.spp., descriptions, (30) 757.
- Cryptophorus ligustici, studies, (33) 657.
- Cryptarthrum walkeri, notes, (27) 458.
- Cryptaspis n.g. and n.spp., descriptions, (27) 358.
- Cryptoblabes aliena, notes, (27) 657.
- Cryptoccephalinae, catalogue, (30) 458.
- Cryptoccephalus incertus, studies, (36) 54.
- Cryptochaetum monophlebi, studies, (36) 757.
- Cryptococcus—
 anseris, description, (29) 83.
 fagi in Nova Scotia, (30) 358.
- farcininosus—
 infection, association of bacteria in, (40) 680.
 notes, (34) 430, 585.
 studies, (39) 291, 789.
 glutinis, isolation from cheese, (26) 479.
 of Rivolta, notes, (28) 379.
- Cryptodiaspis n.g. and n.spp., descriptions, (27) 358.
- Cryptogamic—
 flora of moor lands, (28) 727.
 laboratory of Pavia, publications of, (31) 746.
- Cryptognatha flavescens, studies, (28) 754.
- Cryptogomus orbiculus, notes, (26) 149.
- Cryptolaemus montrouzieri, notes, (28) 159; (29) 652.
- Cryptomeigenia—
 aurifacies n.sp., description, (28) 657.
 aurifacies, notes, (29) 52.
 sp., notes, (29) 652.
- Cryptomeria japonica—
 fertilizer experiments, (38) 624.
 leaves, essential oil of, (34) 802.
 red plague of, (35) 354.
- Cryptorhynchus—
 batatae, *see* Euscèpes batatae.
- lapathi—
 notes, (26) 753; (28) 156; (36) 456; (38) 155, 358.
 remedies, (34) 656.
 studies, (31) 159; (37) 464.
 mangiferae, notes, (27) 255; (32) 352.
 n.sp. on cassava, (34) 65.
 sp. affecting sugar cane, (34) 556.
- Cryptosphum tahoenae n.sp., description, (26) 859.
- Cryptosporella viticola, studies, (29) 450; (32) 52, 751.
- Cryptostemma calendulacea, description, (35) 642; (36) 639.
- Cryptothrips—
 brevicollis n.sp., description, (35) 255.
 citri n.sp., description, (40) 353.
 floridensis n. sp., notes, (29) 354.
 floridensis, notes, (30) 357; (31) 752, 849; (35) 852.
- Cryptus sp., parasitic on grapevine sphinx, (26) 250.
- Crystal Lake region, Michigan, ecology, (40) 226.
- Crystal violet, antiseptic value, (40) 285.
- Crystallization—
 colloidal bags or containers in, (37) 409.
 notes, (36) 804.
- Crystalloids—
 effect on starch granules, (30) 111.
 relation to soil fertility, (28) 814.
- Cryptoblabes gnidiella, notes, (32) 151.
- Ctenocephalus—
 canis—
 bionomics of, (31) 353.
 distribution on rats, (29) 755.
 relation to leishmaniasis, (36) 654.
- felis—
 as host of Indian kala-azar parasite, (32) 61.
 notes, (35) 260.
 spp., notes, (26) 781.
- Ctenophora angustipennis, notes, (32) 651.
- Ctenopsyllus musculi, distribution on rats, (29) 755.
- Ctenucha—
 brunnea, notes, (35) 465.
 virginica, notes, (29) 251.
- Cuban Experiment Station, notes, (38) 500.
- Cucasa—
 fungicidal value, (26) 345.
 tests, (28) 48.
- Cuckoo, new, from New Zealand, (40) 55.
- Cucujus sp., notes, (26) 453.
- Cucumber—
 angular leaf spot, studies, (34) 442; (36) 249; (39) 853; (40) 250, 449.
 anthracnose, dissemination, (37) 840.
 anthracnose, studies, (35) 652; (39) 853; (40) 250.
 bacterial rot, notes, (31) 747.
 bacterial rot, studies, (30) 149, 648.
 bacteriosis, studies, (35) 454, 546.
- beetle—
 belted, hibernation, (39) 868.
 belted, remedies, (32) 557.
 injurious to potatoes, (37) 157.
 notes, (29) 652; (34) 656.
 relation to cucumber wilt, (35) 546.
 spotted, remedies, (38) 864.
 striped, control, (37) 254; (39) 264.
 striped, notes, (27) 261, 659; (39) 760.
 twelve-spotted, notes, (36) 57, 859.
 western 12-spotted, notes, (34) 857.
- blossoms, beetle on, (40) 853.
- canker, notes, (27) 353; (29) 847; (30) 148, 845.
- collar rot, notes, (26) 446.
- Corynespora leaf disease, notes, (30) 149, 450.
- disease, new, description, (29) 242.
- disease, studies, (31) 52.
- diseases—
 in Michigan, (38) 545.
 in Sweden, (32) 641; (35) 750.
 notes, (30) 647; (35) 246; (37) 653.
 studies, (35) 544; (36) 248.
 treatment, (28) 142; (39) 52.
- downy mildew—
 notes, (32) 342; (33) 146, 245.
 studies, (38) 249.
- first generation crosses, (38) 241.
- flea-beetle, *see* Epitrix cucumeris.
- fly, notes, (36) 654.
- leaf blotch, notes, (26) 446.
- leaf rust, treatment, (35) 546.
- leaf scorch, notes, (37) 248.
- leaf spot—
 description and treatment, (29) 48.
 dispersal and treatment, (26) 447.
- leaf spots—
 notes, (37) 840; (39) 52.
 studies, (39) 355, 853.
- mildew, notes, (37) 453.
- mosaic—
 notes, (36) 47; (37) 752.
 studies, (36) 349, 350; (39) 853.
 transmission, (36) 543.
- pickles, curing, (33) 17.
- root knot, notes, (36) 349.
- rust, notes, (35) 844.
- scab, studies, (38) 449.
- sclerotinia diseases, (40) 49.
- seed, germination tests, (26) 44.
- skins, analyses, (38) 626.
- "white pickle," investigations, (36) 47, 344.
- wild, seeds of, (38) 410.
- wilt, notes, (29) 245.
- wilt, notes and treatment, (28) 746.
- worm, studies, (34) 855.
- Cucumbers—
 calcium content, (39) 747.
 carbon dioxide for, (31) 532.
 culture, (26) 539; (29) 145; (36) 640.

Cucumbers—Continued.

- culture—
 - and preservation, (30) 640.
 - experiments, (37) 742.
 - in greenhouse, (37) 41; (40) 147.
- fertilizer experiments, (36) 839; (37) 41, 742; (39) 745, 843.
- fungus disease affecting, (26) 244.
- Fusarium disease affecting, (26) 54.
- greenhouse, red spider on, (39) 65.
- growth in—
 - partially sterilized soils, (26) 815.
 - sterilized soils, (31) 336.
 - varying light and soil moisture conditions, (30) 142.
- insects affecting, (31) 248.
- lightning injury, (40) 645.
- liming experiments, (39) 745.
- mulching v. clean culture, (33) 534.
- pickling (28) 616.
- preservation, (35) 367.
- seed treatment, (40) 450.
- spraying, (39) 345.
- water requirement, (32) 127.

Cucumis—

- prophetaurum, analyses and digestibility, (27) 871; (32) 167.
- sativus, root system of, (28) 228.

Cucurbit—

- anthracnose, studies, (35) 652; (40) 250.
- bacterial wilt, notes, (37) 150.
- bacterial wilt, studies, (34) 244; (35) 546.
- diseases, notes, (39) 353.
- mosaic diseases, (39) 853.
- wilt, studies, (27) 45.

Cucurbita—

- maxima, root system of, (28) 228.
- melanosperma, carotinoid content, (31) 803.

Cucurbitacea acanthosicyos horrida, description, (29) 60.

Cucurbitaria pithyophila, studies, (37) 353.

Cucurbits—

- forcing with radium, (28) 825.
- parthenogenesis in, (38) 331.

Culex—see also Mosquitoes.

- breeding in rice fields, (40) 857.
- brehmei n.s.p., description, (36) 359.
- pipiens—
 - as affected by Roentgen rays, (28) 57.
 - as host of Crithidia fasciculata, (30) 757.
 - control in England, (26) 860.
 - destruction of larvae, (26) 559.
 - migration, (37) 664.
 - notes, (28) 355.
 - outbreak in Connecticut, (31) 455.
 - relation to temperature, (33) 860.
- quinquefasciatus (fatigans)—
 - as dengue fever carrier, (39) 263.
 - notes, (35) 258.
 - range in United States, (36) 657.
 - studies, (29) 252.
- spp., control, (27) 559.
- spp. in Bahamas, (34) 553.
- spp., notes, (28) 158, 254.
- spp., transmission of poliomyelitis by, (28) 753.

Culicella vigilax, notes, (35) 258.

Culicidae—see also Mosquitoes.

- of Saskatchewan, (39) 661.

Culicoides—

- kiefferi n.s.p., notes, (30) 551.
- sp., destructive to mosquitoes, (26) 559.

Cultivation—

- animal v. motor power, (37) 591.
- effect on—
 - composition of soils, (29) 416, 417.
 - swamp soils, (30) 120.
 - water economy of light sandy soil, (33) 287.
- factors in, (31) 215.
- handbook, (29) 329.
- mechanical—
 - in Europe, (32) 485; (37) 490.
 - in France, (31) 187; (33) 790.
 - in Germany, treatise, (30) 191.
 - treatise, (30) 191.
- motor, handbook, (31) 488.
- ridge method, treatise, (28) 632.

Cultivator—

- motor, description, (27) 293; (28) 84.
- spring-shovel, description, (27) 293.

Cultivators—

- mechanical, tests, (31) 188, 487; (35) 87, 890; (36) 189.
- rotating, notes, (31) 188.
- tests, (29) 186.

Culture—

- media—see also Nutrient media.
 - amino acid content, (40) 201.
 - bacteriologic, (39) 9, 583, 668, 888.
 - bouillon, new, (40) 180.
 - bouillon, studies, (40) 310.
 - for counting colon-aerogenes organisms, (40) 381.
 - counting soil bacteria, (32) 625.
 - pathogenic anaerobes, (40) 677.
 - soil organisms, (40) 739.
 - streptococci, (40) 180, 881.
 - vaccine organisms, (40) 677.
 - water examination, (38) 591.
- from blood, (37) 220.
- from sheep or ox serum, (36) 575.
- from whole blood, (36) 676.
- hydrogen-ion concentration in, (34) 136.
- improvement, (38) 710.
- physiological balance in, (36) 328.
- pipette for tubing, (40) 12.
- preparation, (40) 408.
- reactions, notes, (40) 805.
- relation to production of hemolysin, (26) 481.
- synthetic, studies, (36) 524.
- tests, (38) 684.
- methods for anaerobic organisms, (39) 887.
- solutions, aerating, (36) 524.
- solutions, studies, (38) 730.
- studies, bacteriologic, methods, (39) 9, 828.
- volumeter, anaerobic, (39) 713.

Cultures—

- bacterial, system of notes, (40) 881.
- dried, preparation, (31) 773.
- mass, on solid media, (40) 805.

Culvert—

- pipe, corrugated, tests, (35) 580.
- slabs, reinforced concrete, tests, (33) 487.

Culverts—

- concrete—
 - plans, (38) 189.
 - specifications, (32) 485, 686, 884.
 - v. cast-iron, for roads, (37) 885.
- construction, (26) 890; (27) 190, 292; (33) 291, 588, 688, 782.
- construction and maintenance, (26) 385.
- corrugated metal, specifications, (27) 190.
- corrugated metal, tests, (37) 288.
- designing, (28) 684.
- for country roads, (28) 485.
- inspection and maintenance, (36) 386.
- plans and specifications, (28) 289.
- standards for, (31) 890.

Cumbu, culture experiments, (31) 733; (38) 433.

Cumulus—

- clouds, violent uprushes in, (29) 120.
- over a fire, (34) 413.

Cunila mariana, ice fringes on, (32) 221.

Cunninghamella bertholletiae n.s.p., studies, (28) 646.

Cuorin—

- in horse kindeys, (30) 477.
- ox heart, fatty acids of, (31) 608.

Cuprammonium washes, studies, (38) 255.

Cupressus—

- lawsoniana, damaged by squirrels, (26) 552.
- macrocarpa, structure of wood, (28) 843.
- Cupri sulphas, nature and use, (26) 680.
- Cuproform, use against grain smuts, (27) 445.
- Cuprous oxid, determination in Fehling's solution, (34) 611.
- Curb, concrete caisson, for shallow wells, (29) 484; (32) 586.
- Curein, toxicity, (31) 775.
- Curculionidae—
 - in bamboo stems, (32) 352; (33) 658; (37) 359.
 - in beet plantations in Kief, (31) 655.
 - new neotropical, (37) 765.
 - of British India, (37) 765.
 - of North America, (27) 259.

Curd—see also Cheese making.

- Don, bacterial content, (26) 779.
- knife for cheese, (31) 875.

- Curlew—
 bug, control, (40) 655.
 bug, investigations, (27) 162.
 subspecies, notes, (39) 654.
- Curran—
 anthracnose, investigations, (33) 347.
 anthracnose, notes and treatment, (28) 748.
- aphis—
 alternate hosts, (39) 464.
 migratory habits, (37) 562.
 northern, notes, (30) 53.
 notes, (27) 758; (37) 358.
 studies, (31) 157.
- borer in Tasmania, (38) 261.
 borer, notes, (40) 753.
- cane necrosis, treatment, (28) 748.
- clearwing moth, *see* Curran borer.
- dieback, notes, (37) 251.
 diseases, notes, (30) 147; (39) 652.
 diseases, studies, (32) 441.
- felt rust, notes and treatment, (29) 249.
 fly, yellow, life history and habits, (28) 255.
- fruit fly—
 dark, in California, (37) 566.
 life history and habits, (28) 255.
 notes, (35) 466; (40) 56, 169.
 remedies, (31) 757.
 studies, (38) 466.
- fruit weevil—
 attacking blueberries, (34) 852.
 notes, (31) 351.
- gooseberry hybrid, description, (31) 236.
- industry in Ontario, (31) 142.
- juice, composition as affected by fertilizers, (29) 838.
- juice, preparation, (33) 316.
- leaf—
 diseases, treatment, (34) 747.
 fall, notes, (30) 246.
 spot, notes, (26) 446, 850; (40) 154.
 spot, studies, (38) 546.
- maggot, notes, (29) 158.
- mildew, notes, (34) 648.
- mite, notes, (31) 853, 854.
- oidium, notes, (30) 448.
- pollen, germination, (35) 731.
- pollen, viability, (32) 534.
- root rot, studies, (38) 650.
- rust, notes, (30) 448; (32) 241.
- rust, treatment, (31) 346.
- sap as affected by Bordeaux mixture, (30) 647.
- seeds, oil and press cake from, (40) 803.
- Septoria leaf spot, investigations, (33) 347.
- twig borer or budworm, notes, (36) 754.
- wine, preparation, (27) 412.
- worm, imported, notes, (33) 659.
- worm, notes, (37) 599.
- Curran—
 acidity, (32) 110; (37) 714.
 Alpine, as a hedge plant, (37) 241.
- black—
 abnormal blossoms, (38) 552.
 nematodes affecting, (37) 843.
 pine rust of, (29) 547.
 reversion, (38) 650; (39) 646.
- breeding experiments, (32) 535; (33) 637; (39) 346.
- culture, (31) 142, 441; (34) 42.
- culture—
 and marketing, (38) 844.
 experiments, (28) 436; (32) 540.
 in California, (38) 346.
 in western Washington, (38) 298.
- destruction by *Cronartium ribicola*, (29) 649.
- dried, analyses, (30) 861.
- drying, (37) 114, 509.
- fertilizer experiments, (36) 121; (38) 540.
- for home and commercial planting, (33) 537.
- insects affecting, (28) 352; (38) 843.
- Lübeck, partial sterility in, (31) 225.
- new, descriptions, (29) 838; (31) 337.
- of Germany, (33) 838.
- overwintering of pine rust on, (31) 54.
- preservation by freezing, (39) 344.
- red, as affected by tarring roads, (26) 432.
- red, gooseberry mildew affecting, (26) 344.
- red, history and development, (37) 833.
- relation to white pine blister rust, (30) 152.
- resistance to pine blister rust, (38) 151.
- spray schedules, (39) 39.
- Curran—Continued.
 sprayed, arsenic on, (38) 55.
 spraying experiments, (27) 439.
 transplanting experiments, (35) 37.
 varieties, (28) 542; (32) 538; (37) 243.
 varieties, classification, (39) 541.
 varieties for New York, (26) 239.
 variety tests, (32) 141; (40) 340.
 wild, aphids affecting, (27) 758.
- Current meter—
 gaging stations, equipment for, (34) 84.
 measurements, accuracy of, (30) 885.
- Current meters—
 cup, tests, (31) 288.
 rating, (30) 386; (31) 587, 888.
 use in irrigation canals, (34) 281.
- Curriculum, change of stress in, (36) 393.
- Currying machines for horses and cattle, (27) 90.
- Cuscuta—*see also* Dodder.
 americana, notes, (37) 452.
 destruction, (31) 835.
 epillum, vitality of seed, (27) 841.
 host relationships, (35) 460.
 seeds, determination, (38) 533.
 sp., notes, (28) 52; (37) 755.
 spp., destruction by chemicals, (27) 28.
 spp., germination, (27) 342; (34) 155.
 spp., investigations, (28) 545.
 trifolii, destruction by calcium cyanamid, (26) 44.
- Custard apples—
 as stock for cherimoya and atemoya, (32) 143.
 insects affecting, (27) 453.
 of the Aztecs, (26) 743.
 propagation, (27) 537.
- Cuterebra—
 cuniculi, reproductive and host habits, (34) 358.
 fontinella, egg and ovipositor of, (35) 756.
 n.spp., descriptions, (40) 458.
- Cut-over land—
 clearing, (26) 787; (39) 687; (40) 788.
 fertility indication, (39) 115.
 in Adirondacks, (40) 841.
 south Mississippi, (28) 215.
 the South, (38) 391.
 the South, live stock on, (39) 268.
 pasture and forage crops for, (39) 230.
 re-afforesting, (40) 248.
 utilization, (40) 91.
- Cutthroat grass in Florida, (40) 137.
- Cuttings—
 hardwood, propagation by, (40) 340.
 stimulation of root growth, (39) 826.
- Cutworm—
 army—
 control, (33) 654.
 in southern Alberta, (36) 456.
 life history, (35) 854.
 notes, (35) 758, 853; (37) 255.
 baits, tests, (34) 358; (39) 361.
- black—
 biology, (40) 167.
 notes, (27) 53, 659; (28) 455; (34) 250.
 remedies, (36) 254.
- moths, trap for, (31) 851.
- olive green, notes, (32) 651.
- variegated, notes, (26) 452; (27) 659; (29) 252; (32) 651; (33) 252, 352; (35) 253.
 variegated, remedies, (36) 56.
 variegated, trap for, (31) 851.
- Cutworms—
 control, (27) 136; (32) 246; (39) 158.
 control in greenhouses, (38) 762.
 fungus parasite of, (36) 757.
 in Hawaii, (34) 59.
 in Louisiana, (40) 58.
- injuriously to—
 alfalfa, (29) 158; (36) 53.
 grain in western Canada, (31) 352.
 potatoes, (37) 157.
 strawberries, (32) 556.
 tobacco, (28) 555; (29) 756; (34) 453.
- life history and remedies, (38) 54.
 notes, (27) 659, 755; (28) 351, 653, 654, 752, 854; (29) 252, 652, 653, 759; (30) 140, 454, 753; (31) 155, 848; (32) 349, 448; (33) 652, 746; (34) 251, 360; (35) 360, 465; (37) 195.
 studies, (26) 453.

Cyamopsis—

- psoraloides, analyses, (38) 572.
- psoraloides, notes, (26) 362.
- tetragonoloba, culture in New South Wales, (26) 835.

Cyanamid—

- action as affected by iron oxid, (28) 33.
- ammonification of, (33) 219.
- as source of nitrogen, (38) 220.
- decomposition in soil, (40) 724.
- decomposition, seasonal variation, (32) 514.
- determination, (33) 110.
- determination in fertilizers, (26) 804.
- fertilizing value, (27) 724.
- for corn, (31) 831.
- handbook, (29) 518.
- in fertilizer mixtures, (33) 624.
- industry, (31) 323; (36) 124.
- injurious to fish, (29) 821.
- manufacture, (27) 623; (30) 721.
- manufacture and use, (27) 520; (29) 24.
- nitrogen, fertilizing value, (39) 726.
- paper on, (29) 517.
- preparation, (38) 711.
- process, development and status, (33) 424.
- studies, (29) 127.
- use on moor soils, (39) 438.
- works at Niagara Falls, (32) 622.

Cyanid—

- as affected by salt, (26) 206.
- detection in water, (34) 410.
- effect on—
 - locust borer and locust tree, (34) 757.
 - oxidation in arsenical dips, (38) 585.
 - plants, (32) 846.
 - scale-insect eggs, (32) 245.

fumigation—

- effect on bud formation, (34) 143.
- of ships, (33) 556.
- gas as cause of fruit pitting, (37) 634.
- gas, use against insects, (36) 456.

Cyanin, studies, (34) 709.

Cyanogen—

- determination, (28) 310.
- formation in plants, (28) 527.
- in grasses, (33) 665.

Cyanogenesis—

- review of investigations, (29) 713.
- under digestive conditions, (30) 682.

Cyanophyceae—

- as affected by copper sulphate, (39) 27.
- distribution in soils, (34) 513.
- studies, (27) 780.

Cyanopterus (Iphiaulax) clypeolus n.g. and n.sp., description, (26) 352.

Cyanuric acid—

- assimilation by plants, (27) 32.
- distribution in soils, (38) 202.
- identity with "tetra-carbonimid," (38) 202.
- isolation from soils, (37) 612.

Cyathea medullaris, slime disease of, (27) 51.

Cyathula hereroensis, analyses and digestibility, (27) 871; (32) 167.

Cybocephalus nigrirulus, notes, (28) 754.

Cyclamen mite, see Tarsonemus pallidus.

Cyclocephala villosa—

- life history, (38) 863.
- notes, (29) 252.

Cycloconium oleaginum—

- biology of, (30) 246.
- description, (27) 850.

Cyclohexane—

- effect on soil microorganisms, (31) 27.
- sterilization of soils by, (32) 816.

Cyclone insurance, mutual, in Illinois, (36) 791.

Cycloneda (Neda) sanguinea, notes, (33) 860.

Cyclones—

- in perspective, (36) 419.
- in United States, (33) 807.
- mechanism of, (35) 619.
- nature, (32) 810.
- relation to sunspots, (27) 718; (40) 416.

Cyclonic precipitation, distribution, (35) 419.

Cyclotella as affected by copper sulphate, (39) 27.

Cynoche, flowers of, (35) 431.

Cydia—

- (Grapholita) funebrana, bionomics and remedies, (33) 155.
- pomonella, see Codling moth.

Cydonia—

- japonica, inoculation experiments with brown rot fungus, (33) 247.
- lustranica, Monilia affecting, (28) 241.
- veitchii, description, (35) 743.

Cylas—

- formicarius—see also Sweet potato weevil. notes, (28) 158; (34) 65; (37) 256; (38) 467, 564, 864; (40) 259, 260.
- preventing introduction, (39) 159.
- studies, (40) 357.

spp. attacking sweet potatoes, (38) 864.

Cylindrostomum—

- mettami n.sp., notes, (29) 889.
- n.sp., descriptions, (37) 280; (39) 686.
- notes, (40) 586.

spp., anatomy and biology, (28) 887.

Cylindrostomias in equines, (36) 779.

Cylindrocycladium—

- parvum n.sp., description, (39) 858.
- scoparium, control, (40) 751.
- scoparium, studies, (38) 854; (39) 858.

Cylindrosporium—

- dioscoreae n.sp., description, (28) 446.
- juglandis, n.sp., description, (32) 150.
- morii, studies, (36) 751.
- on Prunus avium, perfect stage, (29) 349.
- on stone fruits, studies, (31) 544.
- padi, description and treatment, (30) 849.
- padi, notes, (38) 546.
- pollacci n.sp., description, (35) 354.
- pomi as affected by cold, (34) 538.
- pomi, notes, (27) 652; (29) 547; (32) 749.
- sp., notes, (27) 649.
- spp., notes, (27) 341.
- spp., studies, (30) 750.
- vaccarianum n.sp., notes, (37) 630.
- yuccae n.sp., description, (37) 550.

Cylindrotoma splendens, life history, (40) 169.

Cyllene—

- picta, see Hickory borer.
- robiniae, notes, (26) 856; (28) 156; (33) 253; (37) 566; (38) 459.
- robiniae, remedies, (34) 757.
- robiniae, studies, (35) 355, 552.

Cyllophorus rubrosignatus n.sp., description, (33) 159.

Cymatodera aethiops, notes, (38) 61.

Cymatophora sulphurea—

- parasites of, (31) 752.
- studies, (36) 54.

Cymbopogon—

- citratum, culture, (36) 538.
- martini, economic uses, (35) 807.

Cymodopsis aristoteliae n.sp., description, (30) 60.

Cynipidae—

- gall-making, of California, (27) 264.
- gall-making, of North America, (33) 857.
- of North America, (26) 759.

Cynipoidea, type species, (38) 63; (40) 862.

Cynips calicis, notes, (38) 654.

Cynodon—

dactylon—

- analyses, (31) 863.
- analyses and digestibility, (27) 871; (32) 167.
- as lawn grass, (32) 828.
- for shifting soils, (37) 333; (39) 441.
- notes, (26) 361; (28) 534.

plecto stachyum—

- analyses, (36) 334.
- studies, (38) 66.

undescribed species, (39) 231.

Cynomolgus philippinensis, notes, (28) 180.

Cynomys cadaverina, hibernation, (38) 262.

Cynomys—

- ludovicianus, control, (34) 57.
- spp., in Colorado, (28) 652.
- spp., systematic account, (35) 551.

Cyperus—

- alopecuroides as reclamation crop, (30) 234.

edulis, notes, (29) 362.

esculentus as duck food, (30) 545.

esculentus, description, (29) 59.

rotundus, eradication, (40) 823.

spp., host of corn billbug, (26) 862.

spp., host of curlew bug, (27) 162.

usitatus, analyses and digestibility, (27) 871; (32) 167.

Cyphella heveae, notes, (38) 52, 759.

- Cypress—
 Alaska, biennial fructification, (29) 543.
 of Rocky Mountain region, (33) 343.
 pecky condition of, (31) 349.
 southern, (34) 46.
 treatise, (33) 49.
 twig tuberculosis, notes, (29) 651.
 young, water requirements and growth, (35) 747.
- Cyrtidae of North America, (40) 757.
- Cyrtogaster—
 glasgowi n.sp., description, (32) 557.
 javensis n.sp., description, (37) 607.
- Cyrtolobus sp., notes, (26) 148.
- Cyrtoneura stabulans, notes, (35) 659.
- Cyrtospermums, culture and analyses, (32) 37.
- Cyrtotrachelus longipes, life history, (31) 61.
- Cysticercus in American sheep, reindeer, and cattle, (27) 182.
- Cysticercus—
 bovis, destruction by freezing, (32) 880.
 cellulosa, hosts of, (29) 586.
 n.sp., affecting sheep, (28) 681.
 ovis, investigations, (29) 886.
 pisiformis in kittens, (37) 693.
 spp., notes, (28) 681.
- Cystin—
 addition to low-protein diet, (38) 570.
 and tyrosin, separation, (31) 807.
 determination in proteins, (26) 22.
 effect on growth, (35) 269.
 nutritive value, (38) 569.
- Cystitis, hemorrhagic in cattle, (26) 881.
- Cystoadenoma in a fowl, (36) 676.
- Cystopsora oleae, life history, (28) 153.
- Cystopus—
 candidus—
 notes, (29) 245; (34) 750.
 on white mustard, (32) 544.
 spore germination and infection in, (26) 342.
 ipomoeae panduranae—
 notes, (31) 447.
 studies, (34) 156.
 on cruciferous plants, (26) 342.
 sp. on sweet potatoes, (37) 452.
 spp., oospore parasite of, (31) 641.
- Cystospora batata—
 n.g. and n.sp., description, (36) 544.
 studies, (39) 456.
- Cyta brevipalpa, notes, (27) 861.
- Cytase, excretion by *Penicillium pinophilum*, (28) 803.
- Cytisus—
 adami, description, (27) 31.
 adami, graft hybrids of, (33) 429.
 adami, oxidases, (27) 733.
 notes, (40) 844.
 proliferus, culture in Hawaii, (32) 730.
 scorpius, notes, (29) 441.
 spp., anatomical structure of wood, (26) 827.
- Cytodiplosora castaneae, notes, (36) 752.
- Cytodites nudus in fowls in South Africa, (35) 678.
- Cytology—
 index catalogue, (32) 166.
 methods and value, (38) 328.
 progress in, (26) 876.
 relation to study of genetics, (26) 672.
 treatise, (26) 876.
- Cytoplasm—
 fixation, (38) 329.
 rôle in heredity, (29) 66.
- Cytorhyses—
 aptharum, studies, (27) 379; (28) 376.
 cocci, detection, (26) 682.
 cocci, relation to foot-and-mouth disease, (31) 282.
- Cytospora—
 chrysosperma, studies, (39) 357.
 leucostoma—
 affecting cherries, (30) 353.
 notes, (31) 539.
 studies, (37) 554; (39) 149.
 on sugar cane, (40) 844.
 sacchari, notes, (35) 749; (37) 553; (40) 157.
 sacchari, studies, (38) 851.
 sp., notes, (28) 750.
 spp., inoculation experiments, (27) 651.
- Cytospora—Continued.
 spp. on plums, (34) 648.
 stictostoma and *Phoma asparagi*, relation, (38) 752.
- Cytosporina septospora n.sp., description, (26) 852.
- Cyttaria darwinii, notes, (27) 51.
- Dacnusa n.spp., descriptions, (29) 359.
- Dactylis glomerata, see Orchard grass.
- Dactyloctenium aegyptiacum—
 analysis, (36) 334.
 analyses and digestibility, (32) 167.
 notes, (26) 361.
 studies, (38) 66.
- Dactylomyces spp., in Norway, (31) 327.
- Dactylopiinae of Hawaii, (36) 551.
- Dactylopius—
 calceolariae—see also Mealy bugs.
 fungus disease affecting, (26) 553.
 confusus, notes, (28) 451.
 perniciosus—
 injurious to cotton, (27) 454.
 notes, (30) 549.
 spp. on sugar cane, (40) 57.
 vitis, notes, (26) 655; (36) 755.
- Dacus
 cucurbitae—
 life history, (32) 452.
 studies, (33) 562; (37) 566.
 ferrugineous, notes, (27) 359; (29) 453.
 oleae—
 danger of introduction, (39) 467.
 notes, (27) 357, 857; (32) 56.
 remedies, (35) 57.
 spp. as affected by oil of citronella, (28) 455.
 spp. in Africa, (31) 456.
 spp. in India, Burma, and Ceylon, (37) 160.
 spp., notes, (30) 552; (35) 259.
 spp., remedies, (31) 757.
 tryoni, control, (40) 356.
 tryoni, notes, (27) 857.
 vertebratus, notes, (36) 654.
- Daedalea unicolor—
 fruit bodies of, vitality, (30) 350.
 in northern France, (31) 647.
 injurious to maples, (26) 752.
- Daffodil—
 bulb mite, notes, (27) 457.
 bulbs, food poisoning caused by, (35) 556.
 fly, life history, (32) 350.
- Daffodils—
 certificated by Royal Horticultural Society, (31) 340.
 classification, (31) 837.
 improvement, (37) 836.
 manual, (32) 143.
 treatise, (34) 741.
- Dahi, analyses, (27) 268.
- Dahlia—
 Botrytis disease, notes, (30) 151.
 diseases, notes, (31) 343.
 inulin coagulating substance in, (36) 127.
 phyllody of corolla in, (34) 143.
 storage rot, notes, (30) 349.
 tubers, transformation of reserve substance in, (27) 525.
 variabilis, betains in, (27) 203.
 Verticillium wilt, studies, (33) 244.
- Dahlias—
 and their culture, (35) 41; (40) 541.
 bud variation, (40) 447.
 cut, preservation, (31) 837.
 notes, (29) 341.
 stunted growth of, (28) 345.
 treatise, (29) 441; (36) 743.
 varieties, (31) 340; (33) 540.
- Dalkons, culture, (34) 41.
- Daincha as green manure, (37) 824; (38) 220, 336.
- Dalpreps abbreviatus, remedies, (26) 552.
- Dairies—
 cooperative—
 in Denmark, (27) 590.
 in Netherlands, (28) 669.
 in United Kingdom, (27) 794.
 disinfection, (26) 478.
 farm, plans, (38) 292.
 hot water for, (28) 892.
 letting, in England, (27) 676.

Dairies—Continued.

steam and electricity in, (27) 690.

steam pipes in, (29) 893.

Dairy—

apparatus—*see also* Cream separators, Cream-

ery equipment, Churns, etc.

notes, (27) 792; (34) 571.

tests, (27) 676; (28) 372; (36) 571.

arithmetic, courses in, (35) 195.

association, cooperative, in Missouri, (27) 591.

bacteriological laboratory at Dorpat, report, (28) 178.

bacteriology—

at Berne Congress, (34) 76.

handbook, (27) 74.

investigations, (27) 376.

outline, (38) 781.

treatise, (30) 378, 677; (32) 577.

barn—*see also* Cow barn.

at Kentucky Station, (31) 893.

at McNeill substation, (28) 274.

at University of Missouri, (27) 792.

description, (32) 589; (35) 499.

barns—

as factor in sanitary milk production, (37)

684.

construction, (34) 789; (35) 495; (36) 91,

190; (37) 696, 872.

evolution in, (28) 371.

for prairie farms, (35) 689.

plans, (28) 371; (32) 470; (34) 487.

plans and specifications, (33) 783.

remodeling, (28) 787.

sanitary, lecture on, (26) 188.

sanitary mangers for, (33) 489.

ventilation, (29) 474.

building—

at U. S. Naval Academy farm, (36) 590.

construction and equipment, (31) 892.

notes, (29) 876.

plans, (37) 90.

by-products—

for pigs, (39) 375.

pasteurization, (34) 673.

utilization, (27) 97.

cattle, *see* Cattle, Cows, etc.

chemistry, progress in, (26) 315; (37) 373.

chemistry, treatise, (32) 501.

competitions in Denmark, (28) 775.

competitions in Wisconsin, (28) 74, 272.

conveniences, (32) 590.

convention in Washington, (35) 98, 275.

education in Great Britain, (37) 893.

education in United States, (37) 893.

efficiency table, (37) 775.

experimental work in Pennsylvania, (34) 498.

exports from Denmark, (30) 91.

extension work in Nevada, (36) 95.

factories, distribution in Wisconsin, (27) 74.

farm—

cost accounting, (40) 375.

in Wisconsin, notes, (28) 790.

modern, description, (28) 176.

plant, construction, (37) 591.

score card, (40) 476.

small, developing, (34) 494.

farmers—

business methods for, (30) 678.

cooperation among, (26) 92.

farming—

crop rotation in, (40) 375.

factors of success in, (32) 89.

for small farmers, book on, (40) 590.

in Arizona, (39) 295.

blue-grass region of Kentucky, (37) 873.

Finland, (27) 877.

Kentucky, (40) 78.

Mississippi, (39) 482.

Monmouth Co., New Jersey, (39) 293.

New Hampshire, (29) 391.

Sussex Co., New Jersey, (40) 473.

the Ozarks, (26) 273.

lessons on, (28) 393.

meaning of, (33) 97.

notes, (32) 870; (36) 195.

papers on, (40) 299.

profitable systems, (28) 395.

profits from, (26) 273.

ready alternative use of crops in, (39) 593.

relation to soil fertility, (27) 280.

Dairy—Continued.

farming—continued.

relation to tenancy, (26) 687.

textbook, (37) 94, 172.

treatise, (26) 78, 574.

farms—

bookkeeping for, (26) 774.

capital, income, and expenses, (28) 894.

cropping systems for, (36) 498.

feed unit system for, (27) 374.

ice for, (32) 591.

farms, inspection—

in Idaho, (30) 178.

in Virginia, (30) 74, 377.

score-card system for, (33) 576.

farms—

management, (30) 391.

management in the Tyrol, (27) 377.

sanitary control, (36) 774.

share-rented, in Wisconsin and Illinois, (38)

877.

water supplies for, (29) 722.

glassware, inspection, (39) 782.

glassware, testing, (27) 473.

herd improvement, (29) 775; (30) 678.

herd records, (26) 79; (27) 73, 283, 375, 676, 776,

877; (28) 74, 175, 176, 371, 472, 673, 775, 796; (29)

70, 272, 278, 375, 475, 577, 876; (30) 177, 271, 375,

377, 572; (31) 174; (32) 267, 470, 573, 774; (33)

96, 275, 765; (34) 181, 182, 269, 472, 774; (36)

673, 872, 873; (37) 574, 684; (38) 74, 176; (39)

483, 782; (40) 375.

herd records—

analyses, (40) 872.

illustrated lecture on, (38) 95.

in New South Wales, (27) 277.

methods of obtaining, (28) 273.

value, (29) 71; (32) 399; (36) 76.

herds—

accredited, papers on, (38) 179.

care and management, (31) 272; (32) 870;

(38) 278.

cooperative testing, (27) 899.

economy in relation to size, (38) 777.

eradication of tuberculosis from, (28) 675.

feed and production records of, (31) 793.

improvement, (37) 271; (38) 877; (39) 882.

management, (31) 394; (38) 578, 777; (39)

678.

on general farms, (40) 574.

testing and grading, (29) 280.

houses—

construction, (35) 791.

construction and equipment, (27) 486.

plans, (27) 190; (33) 892; (38) 480.

husbandry, bibliography, (28) 492.

husbandry instruction, development of, (33)

493.

inspection—

and sanitation, (38) 781.

catalase and reductase test in, (27) 781.

common sense in, (36) 474.

discussion, (33) 701.

fermentation test in, (28) 279.

in Glasgow, (28) 375.

Indiana, (32) 254.

Kansas, (33) 577.

Kentucky, (31) 359.

Louisiana, (35) 663.

Maine, (28) 879.

Massachusetts, (33) 260; (35) 470; (37)

165.

Michigan, (27) 767; (35) 367.

Minnesota, (37) 166.

Missouri, (33) 164.

Montana, (33) 67.

Nevada, (33) 661.

New Jersey, (32) 254.

New Orleans, (32) 357.

North Dakota, (26) 462; (28) 661; (33)

753.

Ohio, (29) 266; (33) 67, 78, 164, 661.

Oregon, (35) 470.

Pennsylvania, (33) 67; (35) 470.

Rhode Island, (40) 559.

Utah, (33) 164.

Virginia, (29) 567, 766; (30) 74; (32) 661;

(36) 63.

notes, (30) 678.

paper on, (29) 500.

Dairy—Continued.

- inspection—continued.
 - score-card system, (27) 678.
 - state, (27) 678.
 - v. bacterial testing, (36) 273.
- inspectors, appointment and compensation, (36) 774.
- institute at—
 - Alnarp, (29) 172; (31) 375.
 - Bern-Liebefeld, report, (28) 372.
 - Proskau, report, (26) 477; (27) 676.
- instruction—
 - committee on, (31) 492.
 - in Illinois high schools, (36) 595.
 - in northern Europe, (30) 194.
 - in various countries, (29) 191.
 - notes, (28) 475; (30) 679.
- Instructors' Association, (27) 106; (30) 679.
- laboratory manual, (31) 792; (34) 571; (37) 872.
- law in—
 - Illinois, (29) 61.
 - Michigan, (29) 61.
 - Nebraska, (26) 868.
 - Oregon, (35) 471.
- laws in—
 - California, (36) 474; (39) 786.
 - Colorado, (31) 373.
 - Connecticut, (31) 259; (35) 367, 558.
 - Iowa, (39) 786.
 - Massachusetts, (31) 79.
 - Michigan, (37) 63.
 - Minnesota, (30) 877.
 - New York, (30) 877; (31) 175.
 - Wisconsin, (30) 165; (37) 875; (40) 462.
- losses, detection, (29) 71.
- machinery, tests, (32) 486.
- management, treatise, (31) 76.
- officials, organizations, and institutions, (27) 881.
- operations, effect on germ content of milk, (29) 878.
- organization, paper on, (29) 894.
- practice, treatise, (30) 271.
- production, costs, (26) 474; (36) 396; (38) 894.
- production, maintenance, (38) 777.
- products—
 - acidity, (37) 373.
 - analyses, (27) 718, 815; (28) 315, 811; (29) 119; (31) 760; (37) 114, 165.
 - as affected by alkali water, (27) 282.
 - as affected by phosphates, (27) 326.
 - chemistry, progress in, (30) 207.
 - deterioration, (26) 371.
 - determination of fat in, (27) 499.
 - educational scoring, (40) 673.
 - examination, (30) 664; (33) 67.
 - examination methods, treatise, (26) 111.
 - exhibition contests, (27) 599.
 - fairs and exhibitions in United States, (28) 796.
 - handling, (37) 777.
 - imports into China, (30) 574.
- products, inspection—
 - and distribution in New England, (34) 380.
 - in Canada, (32) 473.
 - Michigan, (29) 463; (30) 558.
 - Pennsylvania, (29) 867.
 - Queensland, (27) 473.
 - Utah, (30) 474.
 - Virginia, (30) 258.
 - Washington, (29) 266.
 - Wisconsin, (29) 61.
- products—
 - judging by score cards, (27) 74.
 - lactic acid and propionic acid bacteria in, (28) 276.
 - lessons on, (26) 493.
 - marketing, (28) 274; (29) 894; (35) 892.
 - marketing in Queensland, (32) 793.
 - metallic flavor in (35) 276.
 - pasteurization, (35) 378.
 - plant food content, (27) 574.
 - production and use, (32) 773.
 - relation to microorganisms, (26) 372.
 - review of literature, (26) 266.
 - standards and branding, (34) 381.
 - standards for, (30) 679.
 - standards in United States, (29) 776.
 - statistics, (27) 574; (31) 165; (40) 476.
 - statistics in Canada, (26) 896.
 - statistics in United States, (28) 390.

Dairy—Continued.

- products—continued.
 - testing and grading, treatise, (26) 578.
 - testing and handling, (32) 576.
 - testing, methods, (26) 371; (30) 679.
 - transportation, (32) 874.
 - tubercle bacilli in (28) 372.
 - profits, increasing, (29) 71.
 - rations, computing, (27) 176; (36) 374; (38) 73.
 - rations, formulating, (37) 684.
 - refrigerator, description and tests, (27) 293.
 - sanitary conditions in United States, (35) 677.
 - sanitation, notes, (29) 878.
 - school at Königsberg, report, (28) 178.
 - school at Rütli-Zollikofen, report, (26) 477; (28) 372; (36) 571.
 - schools, itinerant, of Ardeche, (28) 297.
 - score card, scope and use, (38) 781.
 - score cards, survey, (37) 175.
 - sewage disposal, (31) 893.
 - sewage, purification, (34) 590, 687.
 - sires, *see* Bulls and Sires.
 - statistics in Minnesota, (37) 777.
 - statistics in Sweden, (28) 475.
 - stock, young, feeding, (36) 773.
 - technology, progress in 1912, (29) 805.
 - technology, treatise, (28) 878.
 - terminology, notes, (29) 172.
 - tests and methods, (31) 875.
 - utensils—
 - aluminum, tests, (35) 189.
 - as source of bacterial contamination, (33) 876.
 - effect on germ content of milk, (38) 878.
 - inspection, (30) 178.
 - steam sterilizer for, (35) 677; (36) 762.
 - washing, (32) 590.
 - wastes—
 - disposal, (31) 773; (37) 588.
 - for pigs, (36) 571.
 - purification, (31) 773; (33) 784.
 - world, new queen, (27) 176.
- Dairying—*see also* Creamery, Butter, Cheese, Milk, etc.
- about Elgin, Illinois, (32) 192.
 - as affected by price fixing, (39) 593.
 - bacteriology in, (33) 277.
 - bibliography, (33) 578; (36) 468.
 - community, (37) 573.
 - course in, (40) 492.
 - function in agriculture, (34) 305.
 - in Alabama, (28) 581.
 - Argentina, (37) 271.
 - Australasia, handbook, (28) 878.
 - Australia, (28) 365.
 - Austria, (27) 375; (30) 896.
 - Bombay, (32) 367.
 - California, (30) 74.
 - Canada, (29) 673, 775; (30) 574; (33) 93.
 - Colorado, (38) 378.
 - Cuba, (39) 282.
 - Denmark, (27) 375; (28) 371; (32) 471; (37) 172.
 - England and Wales, (36) 376.
 - Europe, history, (26) 371.
 - Florida, (38) 877.
 - Germany, treatise, (31) 475.
 - Great Britain, (27) 676; (28) 371; (36) 571.
 - Hungary, (31) 376; (33) 175.
 - Illawarra district, New South Wales, (27) 74.
 - Indiana, (39) 884.
 - Ireland, (27) 375; (28) 371; (30) 574.
 - Italy, (27) 472.
 - Jamaica, (30) 74.
 - Japan, (30) 777.
 - Minnesota, (33) 78.
 - Mississippi, (28) 274.
 - Montana, (28) 74.
 - Netherlands, (27) 676; (31) 691.
 - Nevada, (32) 471.
 - New York, (30) 877.
 - New Zealand, (31) 173; (36) 273, 571; (38) 281.
 - North Dakota, (29) 473.
 - northern Europe, (30) 177.
 - Norway, (27) 472.
 - Nova Scotia, (31) 173.
 - Oklahoma, (29) 876.
 - Ontario, (36) 874.
 - Oregon, (27) 299.

Dairying—Continued.

- in Philippines, (39) 784.
- Queensland, (27) 473, 489; (30) 791.
- Scotland, (29) 473.
- semiarid sections, (29) 473.
- south Mississippi, (32) 266.
- Sweden, (26) 477; (33) 274.
- Switzerland, (32) 870.
- Tasmania, (27) 472.
- the Caucasus, (26) 275.
- the South, (32) 574.
- the Tyrol, (28) 878.
- United States, (32) 773; (38) 777.
- United States, history, (27) 283.
- Uruguay, (36) 572; (38) 778.
- Victoria, (28) 277.
- Virginia, (29) 473.
- Washington, (28) 265.
- western Norway, (30) 377.
- western Siberia, (26) 880; (27) 676; (28) 371.
- Wiesbaden, (26) 371.
- international federation, (28) 178.
- laboratory guide, (29) 93; (32) 173.
- laboratory manual, (31) 694.
- manual, (26) 674; (29) 775; (31) 395; (35) 378.
- mountain, in Norway, (26) 371.
- municipal, notes, (32) 773.
- notes, (27) 574; (28) 279, 371; (29) 375; (31) 573; (37) 872.
- on small farms, (30) 271.
- place in southern agriculture, (39) 676.
- progress in, (26) 315; (28) 112; (30) 313; (33) 673.
- propagation of starters, (26) 478.
- refrigeration in, (27) 376.
- relation to climate, (28) 27.
- review of literature, (32) 173, 566.
- school lessons on, (32) 597; (35) 592.
- short course in, for high schools, (27) 298.
- textbook, (31) 494; (37) 894.
- treatise, (27) 176; (28) 176; (31) 173; (32) 258, 291; (34) 670.
- winter, in South Dakota, (27) 574.
- woman's part in, (37) 893.
- Dairymen, computer for, (31) 276.
- Daisy—
 - leaf spot, notes, (31) 641.
 - ox-eye, dissemination by farm animals, (26) 839.
 - yellow, inheritance studies, (36) 522; (40) 131.
 - yellow, variations in, (32) 726.
- Dakin's—
 - dichloramin-T solution, (39) 185.
 - hypochlorite, toxicity, (39) 586.
 - solution—see also Chloramin-T and Hypochlorite.
 - action on *Bacillus welchii* toxin, (39) 185.
 - action on necrotic tissue, (38) 685.
 - automatic distributor for, (40) 12.
 - composition and use, (38) 782.
 - notes, (40) 182, 883.
 - preparation, (39) 414, 286; (40) 13.
 - studies, (39) 185, 786.
 - use, (38) 283.
- Dalbergia latifolia, notes, (34) 240.
- Daldinia concentrica, fruiting forms, (32) 341.
- Dalmeny Experiment Station, work of, (31) 516.
- Dals, relation to polyneuritis, (28) 567.
- Dam at Powersite, Mo., (28) 716.
- Dams—
 - and weirs, treatise, (35) 288.
 - construction, (27) 787; (33) 586, 885.
 - earth, treatise, (29) 289.
 - for prevention of soil erosion, (37) 286.
 - hydraulic fill, sliding factor, (40) 188.
 - masonry, design and construction, (27) 385.
- Damsel flies of Illinois, (39) 763.
- Danaea roots, mycorrhiza of, (37) 631.
- Dandelions—
 - as food, (35) 470.
 - eradication, (31) 835; (39) 37.
 - lessons on, (31) 792.
 - nectar secretion, (37) 633.
- Danish plant culture stations, report, (30) 134.
- Danthonia—
 - in New Zealand, (37) 537.
 - pallida, analyses, (30) 565.
- Danysz bacillus, virulence, (35) 52.
- Daphnia obtusa, heredity in, (32) 448.
- Daphnids, sex determination in, (26) 773.
- Darac, notes, (31) 258.
- Dargida procluctus, notes, (32) 651.
- Dark day in Jamaica, (38) 210.
- Darkling beetle grubs injurious to tobacco, (29) 761.
- Darkness—
 - effect on plant growth, (26) 431.
 - intensity just before dawn, (32) 211.
 - leaf injury or loss due to, (35) 243.
- Darluc—
 - filum, notes, (36) 541.
 - melaspora on sugar cane, (40) 157.
- Darnel—
 - analyses, (28) 463.
 - as an adulterant of flour, (26) 710.
- Darso—
 - chemistry of, (40) 608.
 - feeding value, (40) 278.
 - starch content, (35) 108.
- Darwinism—
 - and animal production, lecture on, (28) 271.
 - treatise, (27) 175.
- Dascillus cervinus, notes, (27) 458.
- Dasheen—
 - flour, analyses, (39) 870.
 - meal, analyses, (40) 173.
 - shoots, forcing and blanching, (30) 442.
- Dasheens—
 - as food, (36) 561.
 - culture, (38) 231.
 - culture—
 - and analyses, (32) 37.
 - and use, (37) 537; (40) 763.
 - experiments, (29) 637; (37) 329.
 - in Louisiana, (29) 534.
 - in Philippines, (40) 245.
 - in the South, (32) 631.
 - digestibility and use as human food, (38) 468.
 - fertilizer experiments, (29) 637.
 - for pigs, (35) 870.
 - nematodes affecting, (37) 841.
 - notes, (27) 842.
 - notes and analyses, (29) 336.
 - recipes, (29) 361; (36) 761.
 - seeding experiments, (40) 730.
 - varieties, (29) 637; (33) 535.
- Dasychira pudibunda, notes, (27) 255, 755; (34) 63.
- Dasychrypha calycina, notes, (26) 345.
- Dasyliroon spp, notes, (29) 441.
- Dasyllis thoracica larvae, notes, (40) 653.
- Dasyneura—
 - leguminicola—
 - control, (39) 563.
 - notes, (32) 651.
 - popular account, (39) 262.
 - n.sp., description, (35) 256.
 - rhodophaga, notes, (28) 854; (38) 155, 358.
 - ulmea, notes, (35) 659.
 - vaccinii, studies, (39) 60.
- Dasyphora pratorum, hibernation, (34) 254.
- Dasyprocta punctata n.subspp., descriptions, (37) 757.
- Dasyopus novemcinctus texanus, biology and habits, (29) 755.
- Dasyscypha—
 - fuscosanguinea, notes, (28) 750.
 - (Peziza) calycina, studies, (32) 844.
 - subtilissima, studies, (37) 354.
 - willkommii, notes, (27) 350; (30) 248.
- Datana—
 - integerrima—
 - egg parasites of, (29) 658.
 - injuring shade trees, (38) 197.
 - notes, (28) 155; (33) 58; (36) 358; (37) 255; (38) 762; (39) 761; (40) 259.
 - on pecan, (38) 157; (39) 557.
 - ministra, notes, (36) 358.
 - spp., notes, (39) 761.
- Date palm—
 - foliage characters, (33) 342.
 - fungus disease, (39) 453.
 - offshoots, rooting, (36) 142.
 - scapes, remedies, (30) 358.
 - seedlings, sex of, (31) 536.
 - sugar industry in Bengal, (29) 149.
- Date palms—
 - as affected by climatic conditions, (31) 326.
 - culture, (40) 540.
 - culture in Egypt, (27) 645; (35) 145.
 - false, of Florida Keys, (29) 341.
 - fossil fruits of in Texas, (31) 142.
 - origin, (32) 142.

- Date palms—Continued.
ornamental, culture in Arizona, (32) 233.
transplanting experiments, (34) 231.
- Date stone beetle, notes, (33) 750.
- Dates—
artificial ripening studies, (27) 539; (29) 439.
ash analyses, (29) 861.
Babylonian, for California, (31) 238.
breeding experiments, (27) 528.
culture—
experiments, (29) 338.
in Arizona, (32) 232.
California, (26) 336.
Egypt, (38) 347.
Salt River Valley, (29) 439.
the Punjab, (30) 444.
the Southwest, (29) 542.
dried, analyses, (30) 861.
dried, preparation and use, (29) 462.
loss of astringency during ripening, (26) 327.
of Egypt and Sudan, (34) 43.
pasteurizing, (39) 439.
thinning experiments, (35) 537.
treatise, (30) 238.
varieties, (28) 533; (32) 232.
varieties for southern Arizona, (27) 539.
- Datura—
breeding experiments, (36) 838; (37) 546.
electroculture experiments, (30) 430.
for classroom work in genetics, (37) 831.
inheritance studies, (39) 747.
origin of alkaloids in, (27) 228.
spp., breeding experiments, (30) 631.
stramonium—
agglutinating properties, (31) 774.
inheritance studies, (40) 131.
notes, (30) 145.
- Daucus carota, carotinoid content, (31) 803.
- Davainea—
cesticillus, life history, (40) 359.
n.spp., descriptions, (33) 775.
n.spp., in fowls, (34) 281.
spp., intermediate host, (35) 578, 683.
- Daviesia latifolia, constituents of leaves and stems, (32) 501.
- Dawn, "warmth of," (40) 314.
- Daylight illumination, measurement, (32) 810.
- Deamination—
by tyrosinase, (36) 412.
in the animal body, (40) 866.
- Death camas—
description, (32) 474; (39) 386.
examination, (27) 881.
monograph, (33) 177.
notes, (31) 578; (32) 778.
poisoning of sheep by, (28) 197.
poisoning stock, (39) 184, 787.
- Death feigning in insects, studies, (27) 457.
- Debab, transmission by blood-sucking insects, (26) 150.
- Debility in horses, cause, (39) 892.
- Deer—
breeding, treatise, (29) 171.
chromatin bodies in erythrocytes of, (29) 478.
destruction by helminths, (26) 653.
Flat bird reservation, (37) 355.
host of spotted fever tick, (26) 64.
protection in Alaska, (28) 450; (36) 791.
- Deficiency disease, see Diet deficiency.
- Defoliation, effect on—
composition of sugar beets, (31) 435.
wood growth and structure, (30) 228.
- Deforestation in Savoy, (35) 346.
- Degeria funebris, notes, (30) 459; (31) 251.
- Deilephila—
elphenor, notes, (26) 250.
euphorbiae, notes, (26) 656.
- Delaware—
College, notes, (27) 900; (28) 494; (29) 195, 697; (31) 496; (33) 794; (34) 295, 797; (35) 95, 397, 596; (36) 694, 796; (37) 397, 600; (38) 96, 399, 699, 900; (39) 694; (40) 98, 798.
- Station—
Farmers' Day guide for, (32) 693.
financial statement, (27) 396; (29) 793.
guide to experiments, (26) 795.
notes, (26) 300; (29) 195; (31) 600; (34) 797; (35) 95, 596; (36) 694, 796; (37) 397, 600; (38) 96, 900; (39) 300, 694; (40) 98, 798.
- Delaware—Continued.
Station—Continued.
report, (32) 496, 796; (35) 195; (36) 898; (39) 196.
report of director, (27) 396; (29) 793.
- Delphacidae—
of Hawaii, new, (38) 557.
of North and South America, (31) 550.
- Delphacinae of North and South America, (32) 247.
- Delphastus catalinae—
notes, (39) 461.
parasitic on white flies, (37) 58.
- Delphax saccharivora, notes, (29) 52; (34) 753.
- Delphinin, studies, (34) 709.
- Delphinium—
alkaloids of, (35) 780.
consolid, agglutinating properties, (31) 774.
spp., analyses, (30) 577.
spp., notes, (32) 778.
spp., poisoning stock, (39) 386, 587.
- Deltoccephalus—
minki, life history, (35) 553.
n.spp., descriptions, (34) 255.
spp., notes, (27) 855; (33) 356.
- Dematophora—
glomerata injurious to grapes, (31) 544.
necatrix—
notes, (26) 750; (34) 49; (38) 51; (40) 749.
studies, (32) 149.
treatment, (30) 543.
sp. on coffee, (32) 645.
- Demodex—
erinacei n.sp., description, (38) 865.
folliculorum, remedies, (34) 275.
muscardini n.sp., description, (38) 865.
- Demurrage information for farmers, (33) 91.
- Denaturants, detection in ethyl alcohol, (29) 312.
- Dendragapus canadensis, growing in captivity, (27) 675.
- Dendrobium thyrsiflorum, carotinoid content, (31) 803.
- Dendrocalamus strictus, culture experiments, (34) 232.
- Dendroctonus—
brevicornis, see Western pine beetle.
engelmanni, see Spruce beetle, Engelmann.
frontalis, see Pine beetle, southern.
jeffreyi, see Jeffrey pine beetle.
micans, see Spruce beetle, European.
monticola, see Mountain pine beetle.
murrayanae, see Lodgepole pine beetle.
ponderosae, see Black Hills beetle.
pseudotsugae, see Douglas fir beetle.
valens, see Turpentine beetle, red.
- Dendrograph, description, (40) 817.
- Dendrolimus—
pini, egg parasite of, (26) 557.
pini, metamorphosis, (34) 361.
spp., biology and remedies, (31) 655.
- Dendrology—
bibliography, (26) 240; (27) 846.
scope of, (31) 342.
- Dendrometer, description, (30) 347; (38) 248.
- Dendropemon—
sp., notes, (37) 453.
spp. on citrus trees, (39) 56.
- Dendrophoma—
coffeiicola, notes, (38) 51.
marconii, notes, (32) 146.
saccharicola, notes, (37) 553.
- Dendrotettix quercus, notes, (35) 255.
- Dengue fever—
in Australia, (40) 552.
mosquito carriers, (39) 262, 263.
- Denitrification—
as affected by—
organic substances, (31) 223.
soil moisture, (36) 513.
Streptothrix, (27) 621.
in Nebraska soils, (29) 734.
plants, studies, (29) 325.
sandy loam soils, (36) 321.
soils, (26) 721, 723; (27) 424; (29) 817; (31) 722, 818, 819; (34) 423.
soils of different water content, (32) 618.
tilled and untilled fallow, (30) 216.
mechanism of, (30) 718.
role of enzymes in, (32) 112.

- Dental—
 caries, cause, (26) 867.
 decay, relation to foods, (29) 364.
 tartar, formation, (26) 160.
- Denudation, problems of, (40) 118.
- Deodar—
 distillation products of, (35) 317.
 fungus disease, notes, (39) 459, 653.
 needle-cast, notes, (27) 655.
 witches' brooms on, (32) 346.
- Department of Agriculture—*see also* United States Department of Agriculture.
 of Finland, report, (37) 295.
 of Union of South Africa, history and activities, (36) 898.
- Depressaria—
 atomella, notes, (28) 158.
 heracliana, destructive to parsnips, (29) 855.
 heracliana, notes, (35) 853.
 persicaella, biology and remedies, (38) 861.
- Derbidae of Philippines, (38) 461.
- Dermacentor—
 albipictus—
 affecting moose, (38) 487.
 in Minnesota, (38) 566.
 notes, (27) 356.
 andersoni, control in Bitter Root Valley, (29) 658.
 hunteri n.sp., description, (26) 864.
 nitens, relation to equine piroplasmosis, (29) 83, 483.
 nitens, studies, (35) 58.
 parumapertus marginatus, parasite of, (26) 863.
 spp., life histories, (29) 861.
 spp. notes, (27) 866.
 variabilis, transmission of splenic fever by, (28) 758.
 venustus—
 as affected by Roentgen rays, (28) 57.
 biology, (29) 359.
 effects following bite of, (29) 585; (30) 182; (36) 180.
 eradication, (30) 162, 760; (32) 853.
 in California, (38) 484.
 in Montana, (28) 352; (35) 853; (37) 560; (39) 265.
 life history, (26) 64; (31) 176.
 notes, (29) 652; (32) 448; (33) 553, 862; (35) 853; (37) 459.
 relation to paralysis in lambs, (29) 482.
 studies, (26) 254; (36) 158.
- Dermanyssus—
 gallinae, *see* Chicken mites and Poultry mites.
 sp., transmission of spirochetes by, (32) 279.
 spp., dissemination by English sparrows, (26) 246.
 spp., on rodents, (33) 159.
- Dermaptera of Plummers Island, Maryland, (40) 649.
- Dermatea eucrita, relation to fir withertip, (35) 850.
- Dermatella prunastri, investigations, (30) 451.
- Dermatitis—
 granular, studies, (40) 586.
 in horses, (26) 482; (33) 774; (34) 274.
 in pigs, (26) 482; (33) 774.
 pustular, notes, (40) 283.
- Dermatobia—
 cyaniventris, notes, (38) 362.
- hominis—
 egg disposal in, (36) 359.
 life history, (30) 361.
 notes, (26) 781.
 parasitic on man, (27) 259.
 relation in ticks, (40) 62.
 reproduction and host habits, (34) 358.
 summary of information, (40) 263.
- Dermatomycosis of swine, (28) 783.
- Dermatophilus penetrans, notes, (28) 753.
- Dermestes—
 cadaverinus, notes, (28) 249.
 spp., infesting cotton bales, (26) 560.
 vulpinus in Hawaii, (40) 266.
- Dermestidae, catalogue, (26) 560.
- Dermatitis, pustular, in horses, (29) 179.
- Derostenus—
 diastatae, notes, (31) 158.
 fullowayi n.sp., description, (31) 554.
 n.spp., descriptions, (30) 661.
 pallipes n.sp., description, (38) 165.
 punctiventris n.sp., description, (30) 59.
- Derostenus—Continued.
 salutaris, parasitic on plum leaf-miner, (26) 558.
 sp., studies, (28) 560.
- Derrengadera, treatment, (40) 583.
- Deschutes River, Oregon, utilization, (32) 279.
- Desert—
 habitat, experimental evolution in, (40) 129.
 lakes as source of potash, (40) 128.
 mountains, plant distribution on, (40) 129.
 plants, *see* Plants, desert.
- Deserts, precipitation-evaporation factor in, (37) 525.
- Desiantha nociva, notes, (30) 753; (35) 261.
- Desiccation—
 effect on tubercle bacilli, (33) 282.
 of Africa, (37) 807; (40) 717.
 of the earth, (38) 718.
- Desiccator—
 description, (37) 110.
 electrically heated vacuum, (36) 504.
 vacuum, for soils, (31) 16.
- Desmia funeralis, *see* Grape leaf-folder.
- Desmodium—
 adscendens, culture, (34) 736.
 gyroides as a green manure, (36) 324.
 hirtum, culture experiments, (37) 131.
 hirtum, description and use, (30) 735.
 incanum, culture, (34) 736.
 leiocarpum, analyses, (31) 863.
 spp., notes, (26) 362.
 tortuosum, culture, (27) 419; (30) 335, 632; (32) 730.
- Desmometopa, commensalism in, (34) 359.
- Desmonycinae of British India, (40) 63.
- Desmopsis n.g. and n. spp., descriptions, (36) 433.
- Desmosomus longipes, notes, (37) 359.
- Desserts, recipes, (39) 769.
- Deudorix livia, notes, (32) 151.
- Development—
 Act in Great Britain, (38) 794.
 Fund in England, (30) 793.
- Dew—
 ammonia in, (37) 116.
 effect on composition of hay, (26) 235.
 genesis of, (31) 22.
 measurement, (34) 510.
 point, determination, (31) 22.
 point, investigations, (35) 318.
 ponds, accumulation of water in, (30) 118.
 ponds, treatise, (33) 806.
 relation to grape mildew, (28) 152, 448.
 relation to spread of plant diseases, (38) 47.
- Dewberries—
 breeding experiments, (28) 542; (40) 742.
 culture, (31) 441; (32) 639; (34) 42; (35) 448.
 culture experiments, (28) 436; (38) 41.
 culture in southern Texas, (32) 539.
 phylloidy of corolla in, (34) 143.
 sterility in, (36) 444.
 varieties, (27) 241; (28) 542; (37) 243.
- Dewberry—
 diseases, notes, (37) 52; (39) 652.
 double blossom, investigations, (26) 850.
 rusts, notes and treatment, (29) 50.
- Dexidiæ, new, in South America, (34) 65.
- Dextrin—
 commercial, examination, (39) 805.
 determination in—
 food products, (27) 111; (34) 205.
 sugar products, etc., (31) 412.
 wheat, (28) 836.
 digestion by bees, (31) 255.
 history of, (26) 106.
 methods of analysis, (27) 205.
 oxidation with bromin, (40) 613.
 production and use, (32) 117.
 products, examination, (34) 11.
 use in food products, (34) 167.
- Dextrinase, bacterial, preparation, (37) 411.
- Dextrose—
 absorption by plants, (27) 635.
 absorption, effect on composition of blood, (28) 867.
 and picrate solutions, color production in, (39) 611.
 content of preserved fruits, (27) 766.
 detection in presence of lactose, (28) 205.
 determination, (34) 611.

- Dextrose—Continued.
determination in—
blood, (39) 611.
muscular tissue, (37) 617.
presence of nitrogenous bodies, (28) 504.
effect on—
ammonification, (28) 718; (35) 729.
availability of nitrogen, (28) 724, 725.
carbon dioxide production, (30) 123; (34) 127.
soil nitrogen, (31) 722; (35) 218.
feeding during inanition, (26) 465.
from cellulose in digestion, (26) 873.
heat of combustion, (26) 160.
in Fucoidae, (29) 566.
in grape leaves, (27) 731.
ingestion, effect on metabolism, (28) 866.
solution, osmotic pressure, (28) 262.
Deyeuxia forsterii, analyses, (30) 565.
Dhaicha as green manure, (27) 337, 637; (36) 232.
Dhaura, notes, (29) 443.
Dhauri, notes, (34) 239.
Dholl, factors affecting cooking, (35) 556.
Diabetes—
acidosis in, (35) 473.
and glycosuria, treatise, (32) 474.
blood lipoids in, (35) 666.
carbohydrate cures for, (28) 262.
effect of alcohol in, (40) 364.
experimental, in cats, (32) 180.
increased oxidation in, (40) 766.
metabolism in, (35) 369, 371; (36) 763; (37) 267.
pancreatic, in dogs, (36) 562.
protein feeding and creatinine elimination in, (35) 665.
relation to diet, (30) 168.
soy bean flour for, (27) 664.
studies, (34) 462.
treatment, (35) 371.
Diabetic—
blood sugar, dialysis, (39) 671.
coma, cause, (40) 463.
foods, (30) 664; (40) 284.
foods, analyses, (29) 660; (35) 558.
metabolism as affected by adrenals, (33) 754.
Diabetics, use of rice by, (28) 861.
Diabrotica—
baateata, hibernation, (39) 868.
baateata, remedies, (32) 557.
duodecim-punctata, notes, (27) 360; (36) 859; (40) 58.
graminea, notes, (29) 53.
graminea, studies, (37) 256.
longicornis, life history and habits, (35) 356.
longicornis, notes, (29) 252.
soror, notes, (32) 651; (34) 656, 857.
spp. injurious to potatoes, (37) 157.
spp., notes, (29) 652; (30) 56.
trivittata, notes, (34) 656.
virgifera notes (26) 654; (28) 161.
vittata, *see* Cucumber beetle, striped.
Diachasma—
as fruit fly parasite, (40) 459.
crawfordi n.sp., description, (26) 352; (30) 460.
fullawayi, notes, (38) 767.
fullawayi, studies, (38) 659.
pilosipes, notes, (34) 455.
spp., parasitic on fruit fly, (37) 856.
tryoni—
in Hawaii, (32) 757.
notes, (34) 556.
parasitic on fruit flies, (31) 456.
studies, (38) 659, 767.
Diachasmimorpha comperei n.g. and n.sp., de-
scription, (30) 256.
Diacrisia—
obliqua, notes, (27) 54.
virginica, control by parasites, (37) 760.
Diacrurus muliebris, systematic position, (40) 656.
Diagnosis—
chemical and microscopical, treatise, (36) 412.
exercises in, (31) 376.
Diagnostic methods—
biologic, efficacy, (31) 376.
treatise, (27) 284.
Diagnostics, biologic, inconsistencies of, (29) 500.
Dialysis—
quantitative, new apparatus for, (31) 501.
value in soil studies, (30) 123.
Diamalt, value in bread making, (29) 765.
Diamerus fici, notes, (27) 458.
Diamesa mendotae n.sp., life history, (34) 651.
Diamid, assimilation by plants, (26) 32.
Diamino acids in proteins, nutritive value, (38) 569.
Diamond-back moth—
in South Africa, (39) 561.
life history, (37) 663.
notes, (28) 854.
remedies, (26) 250; (28) 59; (34) 654.
Dianthidium—
arizonicum, notes, (36) 360.
n.sp., description, (36) 258.
Dianthus—
breeding experiments, (27) 741.
inheritance of doubleness, (39) 123.
Diaphania nitidalis, *see* Pickle worm.
Diapheromera—
femorata, *see* Walking-stick.
veliei, notes (40) 353.
Diaportha—
ambigua, notes, (34) 543.
batatatis—
n.sp., description, (28) 548.
notes, (32) 343.
studies, (29) 153; (34) 156; (39) 854; (40) 347.
cubensis n.sp., description, (39) 254.
parasitica—
and Endothia radicalis, relationship, (27) 451.
history and distribution in Massachusetts, (26) 551.
in France, (33) 56.
life history and morphology, (34) 157.
notes, (26) 56; (27) 252, 653, 753; (40) 53.
relationships, (28) 651.
studies, (26) 345; (27) 852; (28) 551; (29) 156; (38) 449.
umbrina n.sp., on roses, (40) 544.
Diaprepes—
abbreviatus—
doublieri, notes, (39) 862.
notes, (28) 752; (34) 753; (39) 742.
in West Indies, (38) 61.
n.sp., and n.subsp., description, (37) 765.
quadrivittatus, notes, (39) 58.
spengleri—
denudatus n.var., description, (33) 360.
notes, (30) 355; (39) 59.
studies, (33) 458.
spp. of West Indies, (33) 360.
Diapus furtivus, life history, (37) 854.
Diaretus (Aphidius) obsoletus n.sp., description, (30) 758.
Diarrhea—
bacillary, white—
in chicks, (29) 288; (31) 484; (34) 189, 275, 387; (35) 184, 878; (36) 281; (37) 82, 182, 280, 383.
in chicks, treatment, (30) 286; (32) 380.
in fowls, (36) 884; (38) 281, 689; (39) 792; (40) 685.
prevention, (33) 273.
chronic, in cattle, (29) 284, 587.
epidemic, relation to flies, (28) 756; (36) 156.
in calves, (26) 381, 483; (35) 488; (40) 887.
chicks, treatment, (34) 881.
infants, relation to heat, (34) 462.
infants, transmission by house flies, (26) 61.
poultry, treatment, (26) 78.
Diarrheal diseases, relation to flies, (31) 654.
Diarsenol, bactericidal action, (39) 488.
Diarthronomyia hypogaea—*see also* Rhopalomyia hypogaea.
in United States, (38) 160.
notes, (36) 59, 856; (38) 358.
Diarthrothrips coffeae n.g. and n.sp., description, (35) 357.
Diaspidiotus—
tsugae n.sp., description, (26) 248.
uvae, notes, (27) 555.
Diaspiniae, new, of Italy, (38) 460.
Diaspis—
bromeliae, notes, (28) 854.
caruelli, notes, (30) 154.
echinocacti, *see* Cactus scale.
pentagona—*see also* Aulacaspis pentagona.
control in Italy, (34) 851.
in Argentina, (27) 556; (37) 460.
notes, (26) 247, 452, 655; (28) 457.
parasites of, (27) 455.
remedies, (29) 854.
piri, remedies, (26) 561.
spp., parasites of, (39) 465, 663.

Diastase—

- absorption of hydrogen chlorid by, (31) 806.
- activity in etherized bulbs and tubers, (30) 728.
- activity in plant extracts, measurement, (33) 315.
- and glycogen of animal tissues, correlation, (30) 204.
- and starch of plant tissues, relationship, (28) 729.
- as affected by ultraviolet rays, (26) 203.
- effect on alcoholic fermentation, (27) 426.
- effect on plant respiration, (27) 221, 426.
- formation and regulation by mold fungi, (31) 730.
- hydrolysis of rice starch by, (28) 407; (30) 111.
- in alfalfa, studies, (32) 502.
- honey, (26) 710.
- red algae, (29) 220; (32) 503.
- tobacco plant, (31) 204.
- oxido-reducing, (40) 580.
- pancreas, effect on oat and wheat starch, (28) 660.
- preparation and properties, (28) 408.
- value in bread making, (29) 765.

Diastases, animal or vegetable, fatal temperatures for, (33) 30.

Diastatic action—

- as affected by filtration, (29) 505.
- as affected by halogens, (28) 504.
- determination in starch solutions, (36) 329.
- in bread making, (26) 358.

Diastrophus fragariae n.s.p., description, (34) 362.

Diatomaceous earth deposits in Virginia coastal plain, (29) 513.

Diatraea—

- canella, remedies, (32) 553.
- larval characters and distribution, (35) 758.
- lineolata, notes, (35) 657.
- saccharalis, *see* Sugar cane borer.
- spp. in British Guiana, (38) 459.
- spp., notes, (29) 353.
- striatalis, notes, (34) 758.
- striatalis, parasites of, (34) 656.
- zeacolella, *see* Cornstalk borer.

Diatripe barleriae n.s.p., notes, (37) 148.

Diaulinopsis callichroma n.g. and n.s.p., description, (30) 59.

Diaulinus—

- begini n.s.p., description, (30) 59.
- begini, notes, (29) 857.
- insularis n.s.p., description, (35) 262.
- intermedius n.s.p., description, (36) 260.
- spp., notes, (31) 158.
- websteri n.s.p., description, (30) 59.

Dibenzoylglucosylase, notes, (32) 502.

Dibothriocephalus latus—

- dissemination by flies, (30) 659.
- from the dog, (39) 791.
- life cycle, (38) 783.

Dibrachoides (Pteromalus) dynaster, parasitic on alfalfa weevil, (31) 61.

Dibrachys—

- australia n.s.p., description, (38) 768.
- bonchaeus, notes, (26) 151; (27) 558.
- clisiocampae, notes, (38) 565.
- clisiocampae, studies, (40) 359.
- meteor n.s.p., description, (31) 355.
- notes, (36) 556.
- parasite of granary weevil, (39) 468.
- spp., notes, (36) 655.

Dibromomethoxyresolulfonphthalein, use in milk cultures, (37) 686.

Dicalcium phosphate—

- as affected by calcium carbonate, (26) 527.
- determination, (32) 409.
- utilization by oats and lupines, (31) 733.

Dicaesticus gerstaeckeri, notes, (29) 853.

Dichloramin-T—*see also* Chloramin-T, Dakin's solution, and Hypochlorite.

and petrolatum dressing for burns, (40) 883.

antiseptic value and use, (40) 181, 182, 254.

composition and use, (38) 782.

for ocular infections, (39) 185.

notes, (40) 882, 883.

preparation, (38) 378.

toxicity, (39) 586.

Dichlorethylsulphid poisoning, studies, (40) 382.

Dichrocrosis punctiferalis, habits and remedies, (29) 759.

Dichomeris—

deflecta n.s.p., description, (31) 352.

marginellus, notes, (35) 54.

Dichomeris—Continued.

marginellus, occurrence in New York, (26) 146.

vacciniella n.s.p., description, (33) 748.

Dichromorpha viridis, parasite of, (40) 459.

Dickinson County Cow-Testing Association, report, (31) 76.

Dicoeoma spp., notes, (39) 549.

Dicoma anomela, analyses and digestibility, (27) 871; (32) 167.

Dicotyledon leaflets, water channels in, (28) 629.

Dicraeus n.spp., descriptions, (40) 263.

Dicranura cockerelli, notes, (26) 452.

Dicranomyia foliocuniculator n.s.p., description, (34) 554.

Dicranotropis maidis, notes, (30) 356.

Dicrocoelium lanceatum, life history, (26) 286.

Dictyna volupis, notes, (29) 256.

Dictyocaulus—

filaria—

first stages, (28) 182.

notes, (27) 886.

studies, (34) 274.

spp., destructive to deer, (26) 653.

spp., life history and treatment, (35) 182.

spp., notes, (30) 285.

Dictyophara spp., key, (38) 560.

Dictyophora phalloidea, notes, (38) 550.

Dictyophorodelphax—

mirabilis, notes, (38) 557.

swezeyi n.s.p., description, (40) 261.

Dictyothrips—

aegyptiacus injuring grape, (39) 158.

betae, notes, (28) 452.

Dicyanamid—

determination in fertilizers, (26) 804.

manufacture from lime nitrogen, (33) 614.

Dicyanamid—

assimilation by plants, (26) 32.

decomposition in soil, (40) 724.

effect on plant growth, (39) 116.

injuring barley and mustard, (40) 515.

studies, (29) 127.

Dicyphus—

luridus and D. prasinus, studies, (39) 58.

minimus, notes, (28) 654.

n.spp., descriptions, (37) 561.

Didea fasciata—

fuscipes, life history, (29) 456.

notes, (36) 460.

Didelphis marsupialis particeps n.subsp., description, (37) 757.

Didinium, resistance to potassium cyanid, (40) 455.

Didonerus minutus, notes, (34) 754.

Didymella applanata, notes, (34) 55.

Didymium nigripes, sexuality in, (38) 331.

Didymosphaeria—

coffeicola, notes, (38) 51.

(Didymella) alhaginis n.s.p., description, (35) 844.

Didrocephala coccinea, notes, (27) 859.

(Dielis) Campsomoris dorsata, notes, (34) 455.

Diastrammena marmorata—

economic importance, (38) 258.

life history and habits, (30) 754.

Diet—*see also* Food and Nutrition.

adequate and economical, (39) 163.

adequate and inadequate, choice of by rats, (39) 770.

amino acids and vitamins in, (32) 857.

and body condition, relation to energy production, (37) 469; (39) 772.

dietetic therapeutics, treatise, (35) 858.

foods, textbook, (29) 360.

hygiene in schools, treatise, (29) 363.

nutrition, textbook, (30) 463.

vitamin, quantitative relationship, (32) 163, 164.

as affected by environment, (26) 465.

as cause of inefficiency in school children, (32) 458.

balancing, (33) 364.

butterfat in, (39) 770.

calcium in, (31) 357, 860.

calcium-magnesium ratio in, (29) 565.

cereals in, (40) 762.

change, effect on carbon dioxide excretion of nursing infants, (31) 662.

charts for physicians' use, (31) 557.

chemical constituents of in relation to growth, (30) 64.

Diet—Continued.

daily, notes, (31) 861.
 deficiencies, correction, (36) 161; (38) 367.
 deficiency diseases—*see also* Beriberi, Rickets, Scurvy, *etc.*
 bibliography, (36) 663.
 notes, (38) 267, 568.
 review of investigations, (36) 363.
 deficiency, relation to animal diseases, (29) 66.
 during growth, essential factors in, (34) 368.
 economical, description, (36) 363.
 effect on—
 blood sugar, (34) 562.
 cholesterol content of tissues, (33) 754.
 disease resistance, (31) 464.
 elimination of creatin and creatinin, (35) 665.
 energy elimination in man, (27) 869.
 feces, (40) 477.
 growth, (29) 164; (32) 256.
 growth of the brain, (34) 662.
 heat production during mechanical work, (37) 671.
 intestinal flora, (36) 664, 665.
 nitrogen and chlorin content of perspiration, (34) 662.
 nitrogen elimination, (30) 864.
 organs of digestive tract, (31) 859.
 protein retention, (35) 765.
 reproduction in albino rats, (38) 770.
 secretion of digestive ferments, (32) 256.
 secretion of urine in infants, (34) 763.
 the teeth, (35) 767.
 thyroid glands, (26) 159.
 toxicity of sodium tartrate, (40) 285.
 toxicity of tartrate, citrate, and oxalate, (40) 465.
 energy content of, (35) 269.
 essential factors in, (35) 472.
 excessive—
 carbohydrate, effects of, (31) 361.
 effects, (26) 262.
 fat, notes, (28) 663.
 fat-deficient, effect on growth of white mice, (36) 366.
 fats in, significance, (40) 170.
 fat-soluble and water-soluble accessories, (35) 563.
 for an orphanage, (33) 365; (34) 462.
 for nursing mothers, (38) 167.
 for poor people, (33) 462.
 for school children, (33) 261.
 from vegetable sources, (37) 264.
 handbook, (26) 262; (27) 269.
 importance of flavors, spices, *etc.*, (32) 764.
 in cotton mill villages in the South, (36) 465.
 Germany, (26) 358.
 health and disease, treatise, (30) 259.
 home for incurables, Toronto, (40) 560.
 house of industry, Toronto, (40) 560.
 India, effect on physical development, (27) 270.
 internment camp at Ruhleben, (35) 559.
 Kansas State Penitentiary, (36) 663.
 military hospitals, (40) 866.
 Scandinavia and Russia, (26) 158.
 schools, report on, (31) 261.
 the Tropics, (30) 260.
 typhoid fever, (32) 564.
 war time, (40) 173.
 inexpensive, notes, (31) 360.
 limited, effects of, (31) 264.
 lipid-free, relation to beriberi and scurvy, (31) 761.
 lists, compilation, (37) 469.
 low protein—
 perils of, (28) 567.
 review of literature, (33) 63.
 treatise, (31) 263.
 mineral content, (30) 168; (34) 563.
 minimum nitrogen content, (28) 261.
 mixed, importance of, (30) 168.
 modern theories, (30) 764.
 of Alaskan Eskimos, (32) 358.
 armies, (40) 362, 560.
 Belgian Kongo natives, (31) 557.
 British and Indian troops in relation to disease, (40) 564.

52831—26†—14

Diet—Continued.

of cafeteria patrons, (38) 366.
 cartridge factory employees of Vincennes, (31) 760.
 children, (37) 671; (39) 66, 282, 472, 772, 876.
 Eskimos, (31) 260.
 families in District of Columbia, (38) 769.
 French army, (33) 165.
 herdsmen in higher Alps, (33) 662.
 Italian Army, (40) 560.
 Italian Navy, (40) 561.
 Italian peasants, (26) 358; (27) 464.
 Japanese, (26) 763.
 laborers in Glasgow, (29) 464; (38) 267; (40) 362.
 laborers in Spain, (29) 365; (32) 562.
 munition workers in England, (38) 267; (40) 865.
 negro mothers in New York, (39) 568.
 prisoners in India, (27) 270.
 prisoners of war in Germany, (39) 66.
 rural population in Germany, (26) 157.
 sailors, (32) 358.
 school children (31) 494; (35) 558.
 self-supporting families in New York, (39) 67.
 soldiers in training camps, (40) 68.
 southern wage-earners' families, (34) 259.
 Swedish persons, (26) 157.
 Swiss working men, (34) 661.
 the masses, economic effects, (31) 462.
 Trappist monks, (26) 868.
 working class, "man value," (40) 174.
 working men, (32) 857.
 working women in Boston, (38) 64.
 young children, (35) 664.
 one-sided, effects of, (31) 361.
 planning, (28) 863; (40) 463.
 poor in calcium, effect, (38) 570.
 prenatal, summary of data, (31) 463.
 preparation, (27) 365.
 principles of, (32) 659.
 protective action against drugs and poisons, (40) 465.
 protein and carbohydrates in, (32) 857.
 qualitatively insufficient, studies, (32) 561.
 rational apportionment during 24-hour cycle, (33) 464.
 reduced, effects, (39) 567; (40) 269, 561.
 relation between mineral elements and protein content, (29) 64.
 relation to—
 beriberi, (28) 764; (29) 180; (31) 857; (33) 261; (36) 264.
 blood cholesterol and "lymphoid defense," (40) 767.
 disease, (30) 367, 764.
 diseases, (26) 264; (38) 267.
 glycogen content of liver, (37) 64.
 growth and body composition, (36) 663.
 intestinal flora, (40) 867.
 pellagra, (26) 263; (32) 255, 564; (34) 258, 259, 764; (35) 767; (36) 464, 466; (38) 366; (39) 70, 266, 665, 666.
 polyneuritis, (27) 868.
 rickets, (29) 464.
 scurvy, (27) 567; (39) 365, 770, 771.
 skin diseases, (31) 463.
 transmissible tumors in rats and mice, (30) 167.
 restricted—
 deficiencies of, (35) 368, 861.
 vegetable, effect on nervous system, (35) 560.
 rôle of vitamins in, (38) 568.
 social service in dispensary work, (30) 167.
 standards for hard work, (39) 267.
 summary and digest of data, (37) 571.
 treatise, (29) 267, 661; (32) 561; (40) 68, 173, 361, 561, 865, 866.
 types of, merits, (31) 462.
 unbalanced, studies, (33) 68, 664.
 uric-acid-free, treatise, (31) 361.
 value of milk and vegetables in, (40) 359.
 value of milk in, (40) 179.
 value of seasoning in, (29) 663.
 vegetable, effect on growth and reproduction, (35) 563.
 vegetable, harmful effect, (33) 867.

Diet—Continued.

- vegetables in, as source of calcium, (39) 876.
- vegetarian—
 - effect on reproduction in rats, (39) 672.
 - notes, (36) 467.
 - of Japanese monks, (30) 863.
 - studies, (36) 60, 664.
- vitamin-free, effect on—
 - carbohydrate metabolism, (32) 257.
 - growth of chickens, (30) 865.
- war-ration, in England, (38) 167.

Dietaries—

- accessory factors in, (28) 260.
- calculation, (38) 366.
- for institutions, (40) 866.
- for Poor Law Unions in England and Wales, (30) 167.
- review of investigations, (30) 560.
- statistics, (32) 163; (40) 362.
- treatise, (40) 68.

Dietary—

- changes, effect on output of urinary constituents, (36) 162.
- computer, (40) 659.
- diseases, nature of active agents, (40) 465.
- factors, isolation, (36) 61.
- family, planning, (31) 394.
- for hospitals for insane, (40) 866.
- for miners, (40) 362.
- for poor families, (26) 762.
- importance in higher education, (29) 464.
- of a 99-year-old man, (31) 360.
- of Filipino families, (35) 471.
- of laborers in Spain, (35) 471.
- properties of the pea, (40) 762.
- properties of the potato, (40) 172.
- qualities of barley, (39) 666.
- ration tables, use, (29) 463.
- standards, discussion, (26) 562.
- studies, (29) 861.
- studies—
 - at New York City Municipal Sanatorium, (35) 471.
 - at Peoria State Hospital, (28) 663.
 - at Rhode Island State College, (26) 762.
 - in Bengal, (28) 567.
 - cities, (38) 63.
 - Paris, (29) 463.
 - Rhine provinces, (28) 663.
 - Stockholm, (28) 662.
 - Syria, (27) 665.
 - review of, (30) 364.
 - with men, (27) 666.
- substances, regulatory—
 - distribution in plants, (36) 61.
 - formation in the animal body, (36) 62.
- tables, data on, (35) 765.

Dietetics—

- calculating energy values in, (29) 166.
- clinical, and nutrition, (39) 567.
- essentials in, (37) 164.
- fundamental principles, (40) 865.
- handbook, (26) 658; (28) 257.
- history, (31) 557; (32) 66.
- in Italian tenements, (31) 360.
- invalid, notes, (27) 464.
- review of investigations, (30) 364, 463.
- teaching, (35) 898.
- treatise, (29) 163; (31) 859; (40) 561.

Dietrich, T.,

- biographical sketch, (39) 900.

Digestibility of fat,

- relation to melting point, (26) 159.

Digestion—

- acid medium for, (36) 763.
- apparatus, description, (37) 503; (40) 410.
- as affected by—
 - coloring substances, (26) 68.
 - saccharin, (26) 257.
 - sterilization of air, food, and surroundings, (28) 569.
 - sugar, (29) 663.
- crate for pigs, description, (37) 678.
- effect of emotions on, (33) 566.
- experiments, *see specific foods and animals*.
- mechanical factors in, (31) 865.
- products, methods of examining, (29) 408.
- products, passage from mother to fetus, (29) 665.
- relation to protein metabolism, (26) 764.
- review of investigations, (30) 364, 560; (31) 265.

Digestion—Continued.

- role of spleen in, (31) 361.
- salivary, in horses, (37) 681, 771.
- salivary, in vitro, (35) 468.
- specific parenteral, (38) 580.
- studies, first American report, (40) 869.

Digestive—

- ferments, assay of, (27) 108.
- leucocytosis, studies, (40) 71.
- tract as affected by diet, (31) 859; (32) 265, 366, 367.
- tract, periodic work of, (29) 465.

Digitalis—

- action in pneumonia, (37) 375.
- as affected by composition of soils, (34) 18.
- improvement by selection, (32) 143.
- leaf spot, notes, (36) 145.
- purpura—
 - agglutinating properties, (31) 774.
 - assimilation of mineral salts by, (34) 135.
 - behavior on lime soils, (31) 425.
 - breeding experiments, (30) 631.
- species hybrids of, (28) 229.

Digitaria—

- didactyla, tests, (38) 828.
- horizontalis, analyses, (36) 334.
- horizontalis, studies, (38) 66.
- sanguinalis, eradication, (27) 733.
- spp., notes, (26) 361.

Digits, supernumerary,

- in ungulates, (27) 369.

Diglycylglycine,

- anaphylaxis produced by, (35) 280.

Digonochaeta setipennis,

- studies, (39) 658.

Dihydroxystearic acid—

- effect on action of fertilizers, (27) 520.
- effect on plants, (34) 126, 325; (36) 212.

Dika fat,

- detection, (29) 613.

Dikes, *see* Levees.

Dilatometer—

- description, (39) 18.
- method for wilting coefficient, (40) 22.

Dilophia graminis—

- in England and Wales, (35) 650.

Dilophonota ello,

- notes, (27) 351; (37) 247.

Dilophonota ello,

- notes, (28) 354, 854; (30) 853; (38) 261.

Dilophosphora graminis

- on wheat, (37) 247.

Dimeromyces n.spp.,

- descriptions, (27) 460.

Dimerosporium mangiferum,

- notes, (37) 839.

Dimethylanilin,

- insecticidal and larvicidal value, (34) 359.

Dimorphism in chrysanthemums,

- (28) 541.

Dimorphopteryx spp.,

- notes, (35) 263.

Dindymus versicolor,

- notes, (27) 858; (40) 753.

Dineutes,

- predacious on mosquito larvae, (36) 57.

Dining room service,

- public, in United States, (38) 769.

Dinocampus—

- americanus, two generations from individual host, (35) 661.

Dinocampus,

- terminatus, biology, (30) 754.

Dinocleus spp.,

- notes, (30) 357.

Dinoderus brevis,

- notes, (29) 458.

Dinurothrips hookeri,

- n.g. and n.s.p., description, (30) 658.

Diocetes obliteratus,

- notes, (28) 454.

Diocetophyme renale in—

- abdominal cavity, (37) 281.

Diocetophyme renale in—

- liver of a dog, (36) 681.

Dionea,

- United States and Canada, (36) 86, 885.

Dionaea,

- leaf closure in, (36) 129.

Dionea timberlakei,

- n.s.p., description (31) 456.

Dionychus parallelogramus,

- notes, (33) 658.

Diorcetryia—

- abietella, notes, (31) 849; (36) 856.

Diorcetryia,

- schützeella, notes, (34) 855.

Diorymellus laevimargo—

- n.s.p., description, (36) 555.

Dioscorea—

- notes, (31) 334.

Dioscorea,

- spp., analyses, (27) 268.

Dioscorea,

- spp., descriptions, (40) 637.

Dioscorea,

- studies, (40) 557.

Dioscorea,

- treatise, (33) 437.

Diospyrus vulgaris,

- notes, (27) 862.

Diospilus—

- neocyti n.s.p., description, (38) 165.

Diospilus,

- polydrusi n.s.p., description, (37) 359.

- Diospyros**—
 kaki—
 as affected by pollination (31) 440.
 classification, (31) 639.
 leaf coloration, (36) 633.
 virginiana, seedless fruits of, (32) 142.
- Dioxydiamidoarsenobenzol**—
 detection (26) 411.
 for equine influenza, (26) 288.
- Dipachystigma cushmani** n.sp., description, (26) 63.
- Dipalmitylsterin** in lard, (32) 801.
- Diparopsis castanea**, control, (40) 256.
- Diphachne fusca**, analyses and digestibility, (32) 167.
- Diphosphate**, fertilizing value, (37) 323.
- Diphtheria**—
 antitoxin, valuation, (26) 676.
 avian, (39) 687.
 avian, virus of, (31) 88.
 bacilli—
 disinfectants for, (40) 478.
 in birds, (34) 83.
 stain for, (39) 286.
 human and avian, relation, (26) 177; (32) 271.
 immunization, (35) 574; (39) 388; (40) 179.
 in fowls, studies, (35) 283.
 milk as source of infection, (40) 79.
 of suckling pigs, notes, (27) 483.
 outbreak, of bovine origin, (26) 883.
 serodiagnosis, (31) 877.
 toxin-antitoxin mixtures, immunization with, (40) 580.
 toxin, studies, (34) 579; (38) 886.
- Diphtheroid bacillus** in horses and calves, (34) 186.
- Diplachne fusca**, notes, (26) 461.
- Diplazon lactatorius**, parasitism, (31) 458.
- Diplobacillus capsulatus**, notes, (32) 178.
- Diplocarpon rosae**—
 control, (40) 159, 751.
 notes, (26) 650; (29) 552.
 studies, (33) 347.
- Diplococcus**—
 glüntheri, notes, (28) 777.
 lymanthrae parasitizing gipsy moth, (38) 159.
 melolonthae, studies, (38) 162.
 pneumoenteritis equi, notes, (28) 483.
 spp., organism resembling, (26) 376.
 (*Streptococcus*) lanceolatus, notes, (26) 586.
- Diplocystis schneideri**, chromosome cycle, (34) 458.
- Diplodia**—
 bataticola, studies, (39) 854.
 cacaicola, notes, (33) 449; (37) 349; (39) 53; (40) 157.
 coffeicola, notes, (38) 51.
 crebra n.sp., notes, (37) 148.
 gossypina, notes, (28) 647.
 griffoni, relation to apple sour sap, (38) 452.
 inoculation experiments, (29) 248.
 longispora, notes, (30) 453.
 maydis, notes, (34) 242.
 natalensis—
 life history and treatment, (28) 245.
 notes, (27) 350, 750; (31) 152; (33) 549; (34) 446.
 on citrus, (32) 346; (35) 748.
 relation to citrus gummosis, (29) 247; (37) 656.
 studies, (39) 152.
 on tea roots, (37) 52.
 palmicola, notes, (34) 242.
 pineae, notes, (27) 548; (34) 242.
 sp. affecting coconuts, (30) 652.
 sp., injurious to rubber, (26) 451.
 sp. on citrus fruit, (39) 56.
 sp. on Hevea stumps, (35) 243.
 sp. on limes, (34) 750.
 sp., studies, (28) 240.
 spp., notes, (29) 548; (34) 247; (35) 750.
 tubericola, studies, (34) 156; (40) 347.
 zeae, notes, (26) 447.
 zeae, studies, (36) 48, 247; (39) 149.
- Diplodiella**, nonvalidity of genus, (24) 242.
- Diplodina**—
 cacaicola, notes, (26) 851.
 castaneae, studies, (28) 240.
 degenerans, n.sp., notes, (37) 148.
- Diploidinium ecaudatum**, morphology and new forms of, (32) 376.
- Diplogaster**—
 aerivora, studies, (40) 267.
 n.spp., life history and habits, (35) 161.
- Diplopoda** of Kansas, (30) 759.
- Diplosis**—
 pyrivora, notes, (30) 655.
 sorghicola, see *Contarinia sorghicola*.
 tritici—see also *Thecodiplosis mosellana*.
 notes, (27) 453.
- Diplospora bigemina** in dogs, (39) 392.
- Diplotaxis**—
 atlantis, notes, (35) 54.
 excavata, notes, (38) 762.
- Dipping**—
 agents, effect on wool, (30) 584.
 agents, tests, (27) 476.
 fluids, oxidation, (38) 585.
 fluids, wetting power of, (35) 356.
 tanks—
 construction, (29) 87, 585; (30) 487, 778, 893; (31) 786; (36) 687.
 control of fluid in, (31) 776.
 for sheep, description, (30) 783.
 formation of arsenate in, (31) 483.
 theory and practice, (34) 186.
 vat, circular, description, (26) 485.
 vat for cattle, construction, (26) 382.
 vats, concrete, construction, (27) 89; (32) 251.
 vats, construction, (28) 181; (29) 585; (33) 680, 691; (34) 479; (37) 477.
- Diprion**—see also *Neodiprion*.
 grandis n.sp., description, (30) 60.
 simile, notes, (34) 363; (35) 54, 760; (37) 255, 261, 568; (40) 754.
 simile, review of investigations, (39) 760.
 spp. in Europe, (35) 760.
- Diprioninae**, new species, (40) 761.
- Dips**—
 arsenical—
 methods of analysis, (31) 115.
 oxidation of, (31) 776.
 preparation and use, (31) 776.
 effect on animals, (29) 585.
 effect on wool, (33) 571.
 soda-sulphur, methods of analysis, (40) 208.
- Dipsacus fullonum**, description and culture, (29) 142.
- Diptera**—
 attraction to ammonia, (36) 460.
 blood-sucking—
 mouth parts and sucking apparatus, (29) 760.
 of Brazil, (29) 54.
 of British Columbia, (32) 551.
 of Venezuela, (27) 862.
 classification, (36) 255; (38) 161.
 coprophagous, biology, (29) 760.
 head capsule and mouth parts, (37) 159.
 larvae, biology, (36) 359.
 larvae, entomophagous, studies, (30) 458.
 leaf-mining, ichneumon parasites of, (29) 359.
 new North American, (36) 553.
 of Denmark, (38) 263.
 District of Columbia, (37) 57.
 Florida, (30) 752.
 North America, biology, (32) 153; (40) 653.
 Philippines, (38) 466.
 West Indies, (34) 65.
 parasitic and predacious in New Mexico, (35) 259.
 parasitic, of Africa, (36) 359; (38) 263.
 photographic atlas, (34) 654.
 photography of, (26) 252.
 viviparous, (38) 261.
- Dipterocarp** forests in Philippines, (33) 443.
- Dipterous larvae**—
 and pupae, notes, (36) 460.
 structure, (26) 558.
- Dipylidium caninum**—
 dissemination by flies, (30) 659.
 in an infant, (36) 660.
 life history, (37) 163.
- Dirhinus**—
 giffardi, parasitic on fruit flies, (31) 456.
 inflexus n.sp., from Glossina, (39) 566.
- Dirphya** (*Nitocris*) princeps, notes, (31) 61; (32) 847.
- Dirt**, determination in milk, (26) 507; (27) 810; (28) 808; (30) 876; (31) 574.
- Dirt test** for butter, (31) 575.

Disaccharids—

- absorption in the intestines, (28) 763.
- enzymatic synthesis, (34) 803.
- resorption in small intestine, (29) 268.

Discoecolla pirina, notes, (26) 449.

Discozia theae, notes, (38) 61.

Discothecium bakeri n.g. and n.sp., notes, (37) 148.

Disease resistance as affected by diet, (31) 464.

Diseases—

- air-borne, relation to ventilation, (34) 192.
- and insects, paper on, (32) 151.
- and malnutrition, correlation, (32) 358.
- bibliography, (26) 246; (29) 652.
- caused by nematodes, treatment, (32) 578.
- deficiency, *see* Diet deficiency diseases.
- effect on metabolism, (32) 563.
- infectious—
 - control, (26) 373.
 - immunization, (31) 576.
 - serodiagnosis, (31) 877.
 - vaccine treatment, (35) 486.
- insect-borne, in Pan-America, (34) 754.
- insect-borne, notes, (38) 558, 580.
- microbiology of, (26) 372.
- milk-borne, control, (33) 701.
- mosquito-borne, textbook, (33) 156.
- nonsyphilitic, use of salvarsan in, (31) 775.
- notes, (30) 249.
- of animals, *see* Animal diseases and specific diseases.
- of plants, *see* Plant diseases and specific host plants.

relation to—

- diet, (30) 367, 764.
- insects, (27) 862.
- milk supply, (28) 674.
- protein split products, (30) 379.

transmission by—

- bedbugs, (31) 550.
- blood-sucking insects, (28) 57, 756.
- flies, (30) 254, 552, 658, 756; (31) 551, 852; (36) 400.
- insects, (26) 760; (29) 756; (30) 455, 546; (32) 552, 846.
- invertebrates, (30) 249.
- parasites, (26) 658.
- sewage irrigation, (31) 417.
- shellfish, (30) 368.
- treatment with enzymes, (31) 607.
- tropical, in Philippines, report, (27) 66.

Dishes, paper, bacteriology, (32) 856.

Disinfectant—

- new, (39) 80.
- testing machine, (39) 680.

Disinfectants—

- action of, (29) 802.
- and heat, combined action on soils, (31) 620.
- as stimulators of growth, (31) 178.
- bactericidal properties, (34) 675.
- bacteriological—
 - examination, (37) 711.
 - standardization, (29) 803.
 - testing, (40) 780.
- chlorin-containing, (40) 181.
- cinchona alkaloid, (40) 478.
- common, (39) 185.
- culture media for testing, (35) 279.
- determination of antiseptic power, (32) 509.
- determination of toxicity, (31) 178.
- effect on—
 - germination of grain, (31) 824.
 - germination of seeds, (26) 820.
 - moor soils, (35) 724.

examination, (26) 481.

germicide value, determination, (26) 289.

injuries to seeds and roots by, (32) 647.

international test for, (29) 802.

methods of examining, (40) 84.

new, (38) 782.

notes, (29) 77.

penetrating power, determination, (26) 289.

phenol coefficients, (38) 581.

so-called, notes, (29) 866.

standardization, (32) 80; (33) 176; (36) 379.

tests, (34) 780; (35) 179.

Disinfection—

- alcohol, theory and practice, (40) 581.
- discussion, (26) 481.
- gaseous, treatise, (26) 173.
- notes, (32) 456.

Disinfection—Continued.

- physical chemistry of, (35) 879.
- theory, (26) 173; (27) 679.
- disking experiments, (40) 733.
- Disodium phosphate—
 - assimilation by ruminants, (31) 71.
 - effect on carnations, (36) 446.
 - importance in the animal organism, (33) 758.
- Disonycha—
 - spp., notes, (29) 456, 761.
 - triangularis, destruction by white fungus, (26) 454.
 - varicornis, notes, (28) 451.
- Dispensaries, diet social service in, (30) 167.
- Dispensary of the United States, (39) 884.
- Disphragus spp. parasitic in fowls, (31) 184.
- Disphinctus sp., notes, (29) 853.
- Dissosteira—
 - carolina, notes, (36) 153.
 - longipennis, notes, (34) 159.
- Distemper—*see also* Dog distemper.
- relation to poliomyelitis, (39) 186.
- symptoms, prophylaxis, and treatment, (27) 187.
- Distillation—
 - colloidal bags or containers in, (37) 409.
 - under diminished pressure, apparatus, (38) 309.
- Distilleries, fermentation processes in, (29) 509.
- Distillers' grains—
 - analyses, (26) 72; (27) 570, 670; (29) 367, 769; (30) 868; (31) 73, 168, 467, 564; (32) 465; (33) 371, 759; (36) 167, 765; (37) 471; (38) 369, 665; (39) 270, 773; (40) 72, 521.
 - ash analyses, (29) 861.
 - digestibility, (39) 171.
 - dried—
 - amino acid in, (33) 665.
 - analyses, (26) 165, 568, 665; (27) 68, 170, 774, 872; (28) 265, 364, 464, 465, 669; (29) 270, 666, 769; (30) 67, 68, 169, 868; (31) 73, 470, 663; (32) 169, 259, 667; (33) 71, 371, 568; (34) 72, 169, 263, 371, 467, 566, 665, 767; (35) 373, 374, 562, 867; (36) 268, 667, 765; (37) 268, 767; (38) 67, 368, 369; (39) 167, 270, 278, 370; (40) 470, 665.
 - distribution of nitrogen in, (36) 269.
 - feeding value, (26) 72.
 - for pigs, (33) 73; (34) 665.
 - screenings in, (29) 271.
 - for milk production, (36) 872; (40) 572.
 - protein for milk production, (36) 671.
- Distillery—
 - by-products, analyses, (39) 270.
 - pulp, fermenting with lacto-pulp, (27) 170.
 - slop—
 - analyses, (26) 266, 267, 363, 770; (27) 872; (31) 766.
 - composition and digestibility, (27) 669.
 - digestibility, (28) 464; (32) 168.
 - dried, analyses, (32) 862; (33) 759.
 - dried, methods of analysis, (29) 311.
 - drying, (27) 669.
 - effect on composition of milk, (29) 374, 776.
 - effect on quality of milk, (26) 370; (29) 579.
 - for hogs, (34) 666.
 - for sheep, (30) 671.
 - vinasse, fertilizing value, (38) 515.
- Distilling—
 - apparatus, descriptions, (40) 709, 806.
 - head, description, (38) 10.
- Distoma tricolor, notes, (35) 684.
- Distomes in intestines of dogs, (30) 785.
- Distomiasis in sheep, treatment, (29) 676.
- Distomum lanceolatum—
 - life history, (26) 286.
 - notes, (28) 257.
- Distributor, automatic, for Dakin's solution, (40) 12.
- Ditches—*see also* Drainage and Irrigation.
- blasting, (35) 789.
- cleaning, (32) 589.
- cost of excavating, (32) 481, 884.
- determination of center, (31) 588.
- determining flow in, (27) 188.
- digging with explosives, (31) 590; (32) 589.
- gate structures for, (31) 782.
- laws in Indiana, (35) 787.
- machines for cleaning, (34) 189.
- small lined, construction, (36) 282.

- Ditching—
by horsepower, (27) 586.
machine, description, (27) 792.
with dynamite, (36) 89.
- Ditropinotus flavicoxus n. sp., description, (27) 60.
- Dittany, ice fringes on, (32) 221.
- Diuresis—
effect on milk secretion, (32) 74.
pituitary factor in, (34) 75.
relation to milk flow, (34) 570.
- Diversinervus silvestrii n. sp., description, (37) 162.
- Divining rod—
history of, (36) 886.
tests, (39) 882; (39) 17.
use, (37) 807.
- Djali bras as food, (40) 658.
- Doassansia spp., life history and cytology, (26) 341.
- Doctostaurus (Stauronotus) maroccanus, notes, (27) 757.
- Dock—
false worm as an apple pest, (36) 461.
fly, breeding experiments, (36) 658.
sawfly, notes, (38) 156, 358.
- Dockage—
in marketing wheat, (38) 840.
on wheat, computing, (38) 694.
- Dodder—
as affected by chemicals, (27) 28.
clover, germination of seed, (34) 155.
destruction by calcium cyanamid, (29) 561.
eradication, (31) 532, 835; (35) 835.
in West Indies, (40) 155.
on alfalfa, (35) 656; (40) 536.
seed, anatomical determination, (36) 442.
seed, removal from clover seed, (36) 339.
studies, (27) 342.
- Dog—
days, paper on, (27) 816.
- Diseases—
etiology and vaccination, (34) 575.
handbook, (37) 778.
in British East Africa, (30) 576.
treatise, (36) 183.
- distemper—
and poliomyelitis, relationship, (30) 781.
bacterin, use, (30) 180.
cause, (27) 782; (29) 682.
immunization, (26) 787.
papers on, (33) 176.
skin reactions in, (36) 381, 382.
studies, (27) 187; (28) 682.
treatment, (26) 578; (27) 181; (28) 185; (31) 378; (32) 84; (37) 584.
- fairs and exhibitions in United States, (28) 796.
- flea, see *Ctenocephalus* spp. and Fleas.
- medicine and surgery, treatise, (32) 783.
- problem in farm States, (31) 868.
- rose leaves, formaldehyde in, (29) 308.
- tick, brown, in Key West, (30) 554.
- tick, parasite of, (26) 863.
- Dogfish—
fertilizer and oil from, (32) 424.
food value, (37) 63.
liver oil, analyses, (37) 712.
scrap, analyses, (27) 327; (32) 424.
utilization, (32) 722.
- Dogs—
Airedale, prepotency in, (29) 770.
anesthesia of, (35) 379.
as affected by heavy meat ingestion, (27) 167.
as carriers of parasites and disease, (34) 280.
brains of, (31) 168.
care and feeding, (28) 173.
cattle and sheep, notes, (27) 471.
cestode parasites, (39) 791.
color inheritance in, (40) 870.
composition of milk, (40) 775.
creatin and creatinin metabolism in, (26) 565.
destruction of sheep by, (32) 866.
digestion experiments, (30) 865.
digestion of cellulose by, (26) 363.
disease of in Brazil, (35) 785.
dissemination of anthrax by, (28) 678.
distribution of *Piroplasma canis* in, (26) 486.
domestic, origin, (27) 72.
Eck-fistula, complement content, (36) 381.
effect of exercise on internal organs, (28) 272.
factors affecting pulse rate, (28) 768.
fasting studies, (27) 465.
flake parasites of, (30) 785.
- Dogs—Continued.
foot-and-mouth disease affecting, (33) 180.
growth of, (30) 467.
host of spotted fever tick, (26) 64.
hypophysectomized, metabolism in, (26) 766.
immunization against—
distemper, (26) 787.
rabies, (30) 282; (31) 880.
tuberculosis, (26) 85.
inbreeding and line-breeding in, (32) 466.
intestinal flukes, (39) 791.
intestinal parasitism, complement fixation in, (34) 682.
measurements of skeleton, (28) 667.
measurements of skull and head, (28) 767.
metabolism experiments, (26) 262, 468; (28) 67, 261, 568, 866, 867, 868; (29) 165, 567; (30) 64, 261, 465, 669; (31) 464; (33) 754, 755.
morphology of blood, (28) 777.
nematode eye parasites of, (30) 279.
nitrate of soda for, (31) 265.
paralysis in, (26) 185.
parasites and diseases of, treatise, (31) 586.
parasites of, (37) 483; (39) 791, 892.
parathyroid glands of, (29) 377.
pointer, coat color in, (31) 865.
pyocyanus infection in, (26) 280.
recurrence of oestrus in, (26) 671.
relation to tapeworms in sheep, (29) 887.
reproductive organs, (27) 369.
sheep, parasitism, (27) 52.
susceptibility to pneumonic plague, (28) 180.
tick paralysis in, (30) 182.
treatise, (37) 769.
viability of cysticerci in, (29) 482.
- Dogwood—
analyses, (38) 309.
twig girdler, notes, (28) 156.
- Dohrniphora venusta, studies, (40) 653.
- Dolichoderus bituberculatus, studies, (39) 156.
- Dolichos—
analyses, (40) 557.
biflorus, analyses, (38) 368.
biflorus, notes, (30) 233.
hosei, notes, (31) 631.
- lablab—
analyses, (27) 68; (38) 368.
analyses and digestibility, (28) 464.
culture, (32) 226.
culture and characteristics, (34) 436.
culture experiments, (32) 227; (38) 336.
culture in Egypt, (34) 232.
description, (30) 828.
hay, digestibility and productive value, (37) 865.
nodule formation, (38) 528.
oil content of seed, (27) 717.
spp., anatomical structure, (31) 314.
spp., notes, (26) 362.
weevil in Hawaiian Islands, (40) 266.
- Dolichurus—
greeni n. sp., description, (37) 569.
stantoni in Hawaii, (40) 854.
- Dolomite—
deposits in Johnson Co., Tennessee, (35) 522.
effect on plant growth, (35) 726.
fertilizing value, (34) 133; (38) 124; (40) 815.
- Dolomitic medium, growth of sorrel in, (40) 40.
- Doloresia conjugata, studies, (36) 759.
- Domestic—
art or science, see Home economics.
economy schools in Wisconsin, (26) 193.
hygiene, papers on, (30) 763.
- Donaciinae, catalogue, (30) 458.
- Donkeys—
breeding in Punjab, (30) 767.
immunization against anthrax, (28) 778.
Somali and wild, hybrid, notes, (26) 269.
susceptibility to pneumonic plague, (28) 180.
- Doracetus barbatus, notes, (30) 657.
- Doria concinnata, parasitic on grapevine sphinx, (26) 250.
- Dorycephalus platyrhynchus, notes, (27) 859.
- Doryphorophaga aberrans, n. sp., description, (36) 255.
- Dosage tables, (33) 838.
- Dothichiza papulea—
in United States, (37) 354.
notes, (38) 147, 646.

- Dothidella**—
ulmea, notes, (27) 349; (30) 48, 248; (37) 253.
vacciniicola n.sp., description, (37) 748.
- Dothiorella**—
gregaria on walnuts, (34) 447.
quercina, notes, (27) 654; (30) 453.
sp. on walnuts, (34) 56, 353.
zeae n.sp., notes, (28) 150.
- Dough**—
as affected by foreign starches, (26) 761.
fermentation cabinet for, (29) 263.
materials, conservation, (36) 464.
sour, fermentation, (29) 60.
- Douglas fir**—
as affected by mistletoe, (39) 57.
bark beetles, studies, (39) 65.
beetles, notes, (26) 561; (32) 552.
beetles, studies, (39) 65.
manna, analyses, (39) 802.
mechanical and physical tests, (39) 246.
Razoumofsky infection, (40) 253.
region, logging in, (40) 152.
reproduction by wind-blown seed, (39) 750.
Rhizoctonia disease, (39) 554.
rots of, (40) 349.
second-growth, source of seed, (38) 145.
- Dourine**—
and nagana, differentiation, (30) 580.
diagnosis, (27) 81, 480, 783; (30) 83; (36) 179, 275, 382, 578.
diagnosis—
by complement fixation, (31) 382.
by conglutination method, (38) 483.
Wassermann's method, (26) 582.
eradication, (37) 477.
immunity to, (29) 379.
immunization, (32) 374.
in European Russia, (29) 479.
horses, (26) 373; (27) 77; (37) 692.
horses, diagnosis, (34) 186, 385.
horses in Brazil, (27) 884.
horses, studies, (26) 88.
Iowa, (38) 78.
mice, treatment, (31) 284.
Nebraska, (32) 584.
Northwest, (34) 185.
Prussia, (27) 181.
South Dakota, (40) 183.
United States, (37) 274.
western Canada, (31) 80.
notes, (27) 378; (31) 79.
outbreak in Saskatchewan, (36) 179.
pathogenicity and treatment, (27) 284.
recurrence in United States, (27) 576.
studies, (26) 881; (31) 177.
transmission by blood-sucking insects, (26) 150.
treatment, (28) 478; (31) 282.
trypanosomes causing, (28) 478; (30) 282.
- Doves**, ring, hybridizing, (28) 270.
- Draeculacephala**—
angulifera, life history, (35) 553.
spp., notes, (27) 858; (33) 356.
- Drafting**—
agricultural, handbook, (30) 490.
manual, (31) 592.
- Drag**, homemade, for soils, (32) 789.
- Dragonflies**—
biology, (39) 558.
food habits, (34) 549, 550.
North American, synopsis, (28) 353.
- Drain air**, chemistry and bacteriology of, (28) 592.
- Drainage**—
and aeration, (33) 97.
as affected by dynamiting, (31) 635.
as an antimalarial measure, (33) 486.
assessments, suggestions for, (36) 586.
by explosives, (27) 687.
by pumps, (26) 589, 789.
canals, automatic gate for, (33) 586.
canals, velocity coefficients, (36) 585.
centrifugal pumping plants for, (28) 890.
channels, distance between, (31) 486.
concrete in, (32) 787.
contracts, notes, (27) 789.
convention of North Carolina, (27) 189; (28) 485; (29) 182.
cooperative methods in, (27) 87.
district assessments, notes, (27) 587.
districts, organization and administration, (37) 883.
- Drainage**—Continued.
districts, topographic surveying for, (32) 884.
ditches—
blasting, (32) 589; (34) 125; (35) 789.
cleaning, (32) 589.
construction, (27) 386; (33) 889.
construction and maintenance, (27) 586.
cost of excavating, (32) 481, 884.
machinery for, (34) 583.
spacing in meadows, (29) 331.
tables for level section, (31) 384.
economic value, (27) 586.
effect on—
bacteria in peat soils, (38) 420.
growth of elms, (28) 344.
soil acidity, (40) 22.
swamp soils, (30) 120.
yield of sugar cane, (34) 586.
engineers, need of, (29) 182.
excavating machinery for, (34) 189.
exercises in, (26) 392.
experiments, (31) 589.
experiments in—
Belgium, (29) 785.
India, (28) 684.
Prussia, (29) 426.
farm, notes, (30) 887; (33) 288; (38) 497, 591, 690; (39) 217.
house, intercepting traps in, (28) 591.
in Argentina, (28) 399.
California, (38) 288.
Canada, (27) 789.
east Prussia, (31) 732.
Egypt, (30) 289; (35) 685; (37) 693.
Georgia, (26) 590, 788.
Hawaii, (37) 384.
India, (27) 19.
Indiana, (31) 783.
Iowa, (34) 885.
Italy, (34) 786.
Java, British India, and Indo China, (31) 89.
Louisiana, (30) 289; (31) 185, 684; (38) 387; (39) 291.
lower Mississippi Valley, (27) 189.
Manitoba, (33) 392.
Maryland, (32) 787.
Minnesota, (35) 286, 580.
Missouri, (26) 891; (33) 89.
Nebraska, (29) 289; (33) 888.
New South Wales, (26) 892; (27) 188; (29) 785.
New Zealand, (38) 690.
North Carolina, (33) 780; (34) 585, 885.
North Dakota, (26) 892; (29) 182; (33) 683.
Nova Scotia, (38) 288.
Ontario, (37) 385.
Oregon, (35) 788; (36) 186, 385, 485.
Oregon, John Day River valley, (36) 283.
Oregon, Malheur and Owyhee projects, (36) 583.
Philippines, (30) 632.
South Carolina, (27) 189; (28) 382.
southeastern Missouri, (33) 780.
southern Illinois, (28) 890.
Tennessee, (26) 812, 893; (27) 483.
Texas, Jefferson County, (33) 188.
the Ganges delta, (31) 784.
Truckee-Carson Experiment Farm, (33) 780.
Tunis, (30) 289.
United States, (28) 890.
Victoria, (30) 887.
Virginia, (37) 384; (38) 389.
Western Australia, (35) 489.
Wisconsin, (29) 589; (30) 588; (36) 813.
land bedding as a method of, (35) 286.
law in—
Georgia, (28) 684.
Iowa, (36) 888.
Louisiana, (28) 890.
Maryland, (32), 787.
North Carolina, (27) 189.
Oregon, (31) 587.
Washington, (37) 281.
legislation, need of, (36) 384.
mole, in England, (31) 685.
notes, (29) 85, 785; (30) 588; (31) 494, 589, 894; (32) 814; (33) 695; (36) 396, 723.
of alkali soils, (31) 889; (34) 283; (36) 186, 584; (38) 591.
American bottoms, (27) 616.
Florida Everglades, (33) 585.

Drainage—Continued.

- of golf greens, (31) 889.
- gumbo, hardpan, and seepy land, (26) 892.
- Haarlem Lake, Holland, (29) 182.
- hill soils, (36) 723.
- irrigated land, (27) 686; (31) 684, 783, 889; (33) 88, 683; (34) 86, 483; (36) 399; (37) 86, 186, 281, 587, 883; (38) 388.
- irrigated land in Egypt, (29) 684, 816.
- Java tea soils, (36) 320.
- lowlands, scoop wheel in, (27) 687.
- marshlands, (40) 587.
- orchard lands, (36) 888.
- overflowed lands, (32) 883.
- peat lands, (38) 591, 690.
- roadbeds, (40) 291.
- Silver Lake and Paulina Marsh, (35) 285.
- swamp lands, (30) 588; (31) 783.
- on the farm, (28) 786.
- open ditch method, (30) 289.
- papers on, (33) 392; (36) 186.
- plans, notes, (28) 289.
- problems, notes, (27) 789.
- project—
 - along Big Black River, Mississippi, (32) 883.
 - in Arkansas, (32) 588; (33) 288.
 - Florida, (27) 189.
 - Hampton and Jasper counties, (31) 684.
 - Louisiana, (27) 189.
 - Mississippi, (26) 590.
 - Missouri, (27) 687.
 - North Carolina, (26) 590; (27) 789.
- projects, organization and financing, (36) 187.
- pumping—
 - cost of, (34) 585.
 - electricity v. steam in, (31) 890; (32) 588.
 - in relation to rainfall, (38) 387.
 - machinery for, (31) 784.
 - plant for, (29) 785.
- reclamation of alkali soils by, (26) 590.
- relation to precipitation and evaporation, (40) 810.
- studies, (31) 783.
- subsoil, for preventing malaria, (30) 486.
- textbook, (35) 788.
- tile—
 - bulkheads, plans and specifications, (28) 289.
 - clogging by roots, (26) 37.
 - cost, (35) 491.
 - in Illinois, (27) 484.
 - manufacture and use, (28) 890.
 - methods of testing, (27) 87, 88.
 - notes, (27) 386; (36) 89.
 - paper on, (27) 189.
 - principles, (27) 290.
 - specifications and tests, (27) 587.
 - studies, (28) 890.
 - system, (37) 286; (40) 587.
- treatise, (26) 588; (33) 585, 586; (37) 587.
- use of—
 - day labor in, (35) 286.
 - explosives in, (26) 91; (29) 182; (31) 589; (33) 90.
 - pumps in, (34) 283.
 - small waterfalls for, (36) 89.
- water—
 - analyses, (27) 320.
 - composition, (27) 19.
 - composition as affected by vegetation, (26) 421.
 - composition, seasonal variation, (32) 123.
 - from unmanured and uncropped land, (32) 121.
 - loss of fertilizer constituents in, (27) 519.
 - waters of Africa, barrages for, (40) 717.
 - work, conversion table and diagram for, (27) 87.
 - work, heavy, excavating plant for, (33) 288.
- Draining the Zuider Zee, (40) 487.
- Drainpipe deposits in swamp soils, (31) 721.
- Drains, pipe, renovation, (31) 685.
- Drain tile—
 - cement, in alkali soils, (39) 86; (40) 386.
 - concrete, durability, (35) 386; (39) 393.
 - mixtures and mixing for, (40) 787.
 - reinforced, tests, (40) 787.
- Drakes, reproductive organs of, (26) 876.
- Drasterius livens, notes, (30) 758.

Drawing—

- agricultural, textbook, (34) 487, 598.
- in agricultural schools, (36) 597.
- Dredgers, suction, manual, (37) 585.
- Dredges, use in land drainage, (34) 189.
- Dredging machinery, description, (30) 289.
- Drepanidae of Japan, (39) 262.
- Drepanothripsrouteri, notes, (28) 354.
- Drexel aerological station, (32) 810; (36) 419.
- Dreyfusia piceae, notes, (26) 147; (35) 256.
- Dried blood—
 - adulteration and use, (38) 711.
 - amino acid in, (33) 665.
 - ammonification in soils, (32) 817; (33) 808; (34) 127; (36) 25.
 - analyses, (28) 364; (32) 169; (34) 263; (39) 222.
 - as affected by calcium and magnesium carbonates, (28) 523.
 - availability, (40) 125.
 - availability—
 - as affected by soils, (32) 516; (34) 130; (39) 726.
 - in presence of sodium nitrate, (38) 723.
 - in soils, (36) 819.
 - of nitrogen in, (26) 124; (27) 723; (28) 724, 725; (35) 123, 426; (39) 817.
 - composition and use, (39) 117.
 - decomposition by Streptothrix, (27) 620.
 - decomposition in soils, (36) 116; (39) 814.
 - distribution of nitrogen in, (36) 269.
 - effect on—
 - acid soil, (39) 627.
 - activity of soil fungi, (36) 215.
 - ammonification, (28) 724.
 - carnations, (36) 445.
 - composition of wheat, (38) 518.
 - lime requirement of soils, (28) 122.
 - maturity of cotton, (31) 40.
 - nitrification, (26) 721.
 - osmotic pressure of soil solution, (39) 324.
 - soil acidity, (28) 137.
 - solubility of calcium and phosphoric acid, (39) 24.
 - tomatoes, (29) 339.
 - fertilizing value, (26) 534, 838; (27) 321, 325; (28) 724, 725; (29) 129; (30) 324, 835; (31) 124, 731; (32) 516, 831; (34) 128, 129, 131, 219, 520; (35) 535; (36) 121, 818; (37) 449, 627; (38) 218, 220, 517; (39) 31, 32, 327, 623, 817.
 - for arid soils, (36) 726.
 - carnations and roses, (29) 840.
 - potatoes, (32) 739.
 - sugar cane, (32) 336.
 - loss from soils, (29) 211.
 - nitrification, (31) 724.
 - nitrification—
 - as affected by lime, (38) 119.
 - in acid soils, (30) 626.
 - in semiarid soils, (37) 319.
 - in soils, (39) 814.
 - notes, (31) 323.
 - preparation in army slaughterhouses, (37) 321.
 - production and use, (27) 327; (29) 517; (30) 126.
 - v. nitrate of soda for cotton, (31) 630.
- Dried-fruit beetle, notes, (34) 454.
- Dried grains in ration, effect on bulk of manure, (40) 126.
- Drinking glasses, sterilization, (38) 663.
- Dropsy—
 - epidemic, investigations, (26) 155.
 - in cattle at high altitudes, (32) 781.
- Drosicha lichenoides n.sp., description, (29) 255.
- Drosophila—
 - ampelophila, *see* Pomace fly.
 - confusa, rearing on sterile media, (31) 63.
 - crossing-over in, (35) 867.
 - hereditary tumor in, (40) 860.
 - melanogaster, food of, (38) 61.
 - mutations in, (33) 758.
 - obscura, notes, (27) 54.
 - paradoxa n.sp., description, (40) 860.
 - segregation of fecundity factors in, (30) 267.
 - sex chromosomes in, (31) 865.
 - spp., notes, (26) 349.
- Drought—
 - at New York City, (32) 810.
 - distribution in Sicily, (31) 716.
 - effect on composition of grasses, (28) 533.
 - frequency during crop-growing seasons, (33) 615.
 - in Georgia, (26) 27.
 - Louisiana, (29) 812.

Drought—Continued.

- in Meramec, Arkansas, and Red River Drainage Basins, (29) 812.
- Middle West, (30) 417.
- Minnesota, (28) 716.
- New York, (29) 812.
- North Carolina, (26) 27.
- Rhodesia, (30) 211.
- the Ozarks, (26) 27.
- intensities, graphic representation, (36) 718.
- nature and methods of combating, (31) 514.
- of 1911 in England, (27) 510.
- of 1911 in Kansas, (26) 214.
- of 1918 in the Gironde, (40) 511.
- relation to weevil resistance in cotton, (26) 41.
- resistance in grapevines, (26) 239.
- resistance in Hopi corn, (30) 436.

Droughts—

- in European Russia, (33) 20.
- in Union of South Africa, (34) 818.

Drug—

law in—

- Connecticut, (27) 767.
- Florida, (26) 157; (31) 259.
- Great Britain and Ireland, (28) 459.
- Louisiana, (29) 566.
- Michigan, (26) 660; (29) 61.
- Nebraska, (26) 868; (31) 67.
- Nevada, (30) 165.
- New Hampshire, (28) 862.
- South Dakota, (29) 566; (36) 63.
- Tennessee, (32) 357.
- Texas, (26) 868.
- United States, results of, (28) 357.
- Wyoming, (27) 767.

laws—

- in California, (37) 63.
- Kansas, (28) 662; (32) 254.
- North Dakota, (33) 662.
- Rhode Island, (37) 570.

treatise, (29) 266.

legislation, manual, (32) 65.

plants—

- as affected by composition of soils, (34) 18.
- breeding experiments, (30) 631.
- culture, (33) 643; (34) 236; (35) 840.
- culture and drying, (36) 642; (37) 145.
- culture experiments, (31) 536; (34) 43.
- culture in Canada, (33) 842.
- culture in England, (32) 46.
- culture in United States, (33) 241.
- description, (26) 327; (40) 247.
- fertilizer experiments, (34) 43.
- growing and collecting, (36) 743.
- improvement, (29) 31; (32) 143.
- methods of analysis, (27) 498.
- notes, (30) 145.
- of Chile, (38) 336.
- of North Dakota, (35) 730.
- of Wisconsin, (34) 345.
- production in America, (39) 449, 545.

powders, microscopic examination, (28) 807.

products, analyses, (29) 866.

products, examination, (26) 462, 660.

standards in Australia, (31) 462.

store beetle, notes, (21) 453; (33) 253.

stores, inspection, (26) 868.

Drugs—

- action under pathological conditions, (26) 71.
- analyses, (30) 165; (31) 359; (32) 763; (33) 164, 165; (39) 68, 267, 669.
- bacteriological examination, (34) 713.
- control of hunger by, (40) 270.
- dispensatory, (39) 884.
- dosage, (31) 80; (33) 81.
- effect on milk secretion, (28) 175.
- effect on polyneuritis, (29) 568.
- examination, (26) 69, 461; (27) 463, 665; (36) 262.
- inspection, (32) 254; (36) 561; (40) 461, 559.
- inspection in—

Alabama, (33) 66.

California, (30) 558.

Connecticut, (26) 659; (28) 357; (30) 664; (33) 363; (34) 458; (35) 558; (37) 863; (39) 366.

Florida, (26) 69; (29) 567, 766; (31) 358; (33) 66, 164; (34) 762; (36) 467, 864.

France, (35) 765.

Georgia, (26) 660; (31) 358; (32) 763.

Drugs—Continued.

inspection in—continued.

- Idaho, (29) 867.
- Indiana, (32) 254, 357; (34) 861; (37) 63.
- Iowa, (36) 762.
- Kentucky, (26) 69, (31) 358, 359; (34) 761.
- Louisiana, (32) 357; (35) 663; (40) 461.
- Maine, (31) 68; (32) 856; (36) 467; (37) 570.
- Massachusetts, (31) 67; (33) 260; (35) 470; (37) 165.
- Michigan, (26) 660; (27) 767; (29) 463; (30) 558; (33) 363.
- Missouri, (26) 564; (29) 362; (31) 462; (33) 164; (37) 63.
- Montana, (33) 67.
- Nevada, (29) 266; (33) 661.
- New Hampshire, (28) 862; (31) 760; (40) 461.
- New Jersey, (28) 862; (32) 357; (35) 164.
- North Carolina, (29) 266; (33) 164.
- North Dakota, (27) 364; (28) 259, 357, 457, 660, 762; (29) 661, 865; (30) 665, 666, 667, 668; (31) 657; (32) 162, 456, 661, 763; (33) 67, 164, 753; (34) 366; (35) 267, 470, 765; (36) 362, 467, 762; (37) 63, 468, 570, 863; (38) 167.
- Ohio, (26) 69; (29) 266; (33) 164, 261, 661.
- Pennsylvania, (32) 763.
- Philippines, (31) 259.
- Rhode Island, (31) 258; (33) 67; (40) 559.
- South Carolina, (31) 259.
- South Dakota, (28) 661; (31) 359; (33) 671; (35) 471.
- Tennessee, (28) 459; (32) 357; (36) 662.
- Texas, (29) 61.
- Washington, (29) 266.
- Wisconsin, (35) 471.

methods of analysis, (27) 498.

microscopical examination, (26) 110; (30) 709.

misbranding, (34) 661.

new and nonofficial, (40) 284.

passage into the sweat, (27) 581.

protective action of diet against, (40) 465.

purity of, (26) 69.

standards for, in Australia, (30) 862.

studies, (27) 208.

synthetic, chemistry of, treatise, (26) 277.

Dry farming—

addresses on, (28) 633.

crops for beet cattle, (38) 872.

effect on soil moisture, (38) 319.

experiments, (27) 529; (29) 31, 224, 426; (30) 435;

(32) 525, 526, 730, 793; (37) 529; (38) 333; (39)

131, 334, 736; (40) 330, 524.

in Australia, (27) 429; (32) 399.

California, (27) 483.

central Oregon, (37) 333.

Colorado, (37) 437; (40) 428.

Egypt, (33) 225.

India, (28) 736.

Mexico, (37) 134.

Montana, (26) 38.

Mysore, (39) 229.

New Mexico, (37) 328; (40) 18.

Oregon, (27) 299; (32) 131, 494.

Roumania, (35) 620.

South Africa, (30) 632.

southern Idaho, (36) 227.

Southwest, (29) 735.

Utah, (36) 528.

western North Dakota, (33) 225.

Wyoming, (36) 529.

investigations in United States, (34) 34.

misconceptions, (27) 531.

moisture and nitrate relations in, (26) 421; (28)

537.

nitrogen and humus problem in, (28) 322; (31)

318.

notes, (28) 40; (31) 723; (33) 632.

papers on, (37) 437.

principles of, (26) 828.

relation to soil moisture, (28) 321.

textbook, (28) 393.

treatise, (32) 430; (40) 823.

Dry—

land tillage methods, effect on nitrate content,

(40) 719.

matter, determination in—

milk, (30) 710.

root crops, (26) 312, 436; (29) 310, 809.

roots, (27) 9.

saccharin products, (28) 614.

- Dry—Continued.
 matter in mixed rations, digestibility, (32) 70.
 rot, notes, (26) 551.
 rot, studies, (26) 544.
 seasons in San Diego, (27) 316.
- Drying—*see also* Foods, Fruit, and Vegetables,
 drying,
 plant, community, (38) 716.
 theory of, (36) 809.
- Dryinidae—
 life histories, (34) 557.
 notes, (28) 63.
- Dryocetes pseudotsugae n. sp., description, (35) 856.
- Dryophanta erinacei, studies, (31) 354.
- Dschamma, notes, (29) 362.
- Duabanga sonneratioides, distribution and use, (38) 751.
- Duboisia spp., studies, (39) 433.
- Duck—
 disease, new, (33) 483; (37) 483.
 house, description, (34) 177.
 hybrids, spermatogenesis in, (27) 371.
 industry in Pateros, Philippine Islands, (30) 374.
 manure, analyses, (38) 23.
 ruddy, sex characters, (39) 878.
 ruddy, tracheal air sac, (40) 351.
 sickness in Utah, (39) 460.
- Ducklings—
 as affected by rice diet, (38) 677.
 cost of raising, (36) 73.
 cramp disease in, (32) 278.
 disease of, (36) 85.
- Ducks—
 breeding and management, (33) 77.
 care and management, (34) 377, 569; (39) 176; (40) 177.
 crest of, (30) 773.
 crossbreeding experiments, (32) 571.
 destruction of mosquito larvae by, (34) 856.
 destruction of tobacco insects by, (26) 638.
 dying around Great Salt Lake, (33) 251.
 egg laying capacity of various breeds, (29) 672.
 eggs, toxicity, (33) 163.
 feeding experiments, (27) 774; (32) 868; (35) 377.
 gonadectomy and secondary sex characters, (38) 170.
 growth of, (30) 467.
 host of Trypanosoma gambiense, (27) 787.
 hybrid sterility in, (29) 167; (30) 374.
 hybrid, studies, (26) 473.
 hybridization, (32) 869.
 incubator hatched, profits from, (33) 763.
- Indian Runner—
 breeding and care, (29) 574.
 British standard for, (30) 675.
 laying capacity, (30) 773.
 manual, (30) 873.
 inheritance of size in, (26) 876.
 mallard, food habits, (40) 254.
 metabolism experiments, (29) 171; (30) 261.
 origin and history of breeds, (27) 572.
 ovarian transplantation in, (40) 367.
 retention of amino acids by, (33) 172.
 runner, as farm layers, (40) 876.
 serum proteins of, (32) 861.
 treatise, (26) 270.
 variations in due to feeding stuffs, (32) 367.
 wild, "fishy" flavor, (40) 255.
 wild, foods for, (29) 373; (30) 545; (33) 251.
 wild, mallard, domestication, (33) 381.
 wild, seasonal changes in testes and plumage, (32) 264.
- Duckweeds, culture for wild ducks, (33) 251.
- Ductless glands, chemical pathology, (32) 78.
- Dugaldia hoopesii—
 description, (39) 386.
 toxicity toward sheep, (36) 680.
- Duguetia, notes, (31) 339.
- Dulcite as source of carbon for molds, (30) 226.
- Dulcite, determination, (26) 709.
- Dum palm fruit, analysis and use, (27) 463.
- Dumraon Agricultural Experimental Station, report, (29) 228.
- Dun sickness—
 in horses, (33) 384.
 notes, (26) 480.
- Duodenal—
 contents, lipolytic properties, (31) 761.
 regurgitation, effects of, (34) 862.
- Duodenum, activity of ferments in, (29) 268.
- Duomitus punctifer, notes (32) 554.
- Duralumin for household utensils, (32) 457.
- Durian—
 analyses and use, (30) 363.
 asexual propagation, (32) 142.
- Durio zibethinus, asexual propagation, (32) 142.
- Durra—
 covered kernel smut, (39) 756.
 culture—
 experiments, (28) 532; (32) 526; (40) 433.
 in Jamaica, (32) 229.
 in Texas Panhandle, (29) 430.
 drought resistance of, (28) 633.
 notes, (31) 333.
 root parasites of, (31) 842.
 Sudan, for dairy cows, (29) 374.
 varieties, (37) 338.
 yields, (29) 32.
- Dust—
 bacteria in, (38) 885.
 determination of air, (35) 210.
 effect on plants, (31) 34.
 effect on transpiration from leaves, (30) 726.
 explosions in grain milling, (36) 686; (39) 494.
 explosions in grain separators, (35) 688.
 from blast furnace gas, analyses, (34) 623.
 furnace, effect on vegetation, (30) 131.
 injury to agriculture and forestry in Austria, (37) 528.
 layers in the atmosphere, (27) 316.
 prevention—
 experiments, (29) 590; (31) 686; (32) 884; (33) 686; (36) 188; (38) 790.
 notes, (34) 484, 890.
 on roads, (38) 87.
 progress in, (28) 383.
 preventives, bibliography, (36) 188.
 "red rain," notes, (27) 414.
 sprays for insects, (31) 449.
- Dustfall—
 in English towns and cities, (30) 619; (34) 15.
 of March, 1918, (40) 616.
- Dusting—*see also* Spraying and specific plants.
 calendar, (39) 149.
 experiments, (39) 349, 548, 552, 855; (40) 154, 341.
 machinery, tests, (39) 868.
 notes, (39) 548.
 v. spraying, (32) 550; (39) 755; (40) 246, 251, 330, 445, 648.
 v. spraying for apple scab, (31) 449.
- Dusts, carbonaceous, inflammability, (37) 109, 410.
- Dusty surface beetle, notes, (31) 757.
- Duty of water, *see* Water, duty of.
- Dye—
 extracts, production from wood, (28) 50.
 plants of Chile, (38) 336.
 plants of Iowa, (29) 626.
- Dyes—
 acid, anticoagulant action on protein, (35) 880.
 action on bacteria, (39) 412.
 azo, purification, (40) 808.
 coal tar, separation, (36) 714.
 fat-soluble—
 behavior in the organism, (26) 671; (27) 670.
 effect on health, (36) 262.
 effect on tuberculous guinea pigs, (29) 177.
 methods of analysis, (36) 714.
 of Dutch East Indies, (30) 697.
 organic, methods of analysis, (27) 609.
 photosensitizing, (40) 16, 710, 711.
 subsidiary, determination in food colors, (29) 11.
 use against tuberculosis, (31) 583.
 use in food coloring agents, (29) 661.
- Dyestuffs—
 analysis and identification, (39) 506.
 from Latin America, (38) 248.
 identification, (29) 12.
 natural, (40) 16.
 vegetable, in Madras, (36) 319.
 vegetable, of New Zealand, (38) 309.
- Dynamite—
 agricultural, tests, (31) 589.
 as soil improver, (29) 748; (32) 730.
 effect on soil, (34) 125.

Dynamite—Continued.

- effect on yield of cotton and corn, (31) 432; (38) 335.
- experiments with, (33) 684.
- for blasting ditches, (35) 789; (36) 89.
- clearing land, (35) 887; (36) 785.
- field crops, (35) 30.
- heavy soils, (34) 819; (35) 493.
- orchard soils, (33) 239; (35) 539.
- soil preparation for alfalfa, (34) 228.
- tree planting, (29) 339; (32) 535; (33) 439; (35) 38, 236, 752.
- stumps, removal with, (26) 187.
- subsoiling with, (30) 386; (32) 884.
- use in agriculture, (33) 90.
- use in drainage, (29) 182.
- use in rubber culture, (34) 47; (35) 582.
- use on the farm, (27) 292, 689; (28) 185.

Dynamiting—

- effect on yield of cereals, (32) 528.
- effect on yield of oats, (32) 430.
- experiments, (39) 336.
- for citrus fruit and pineapples, (31) 635.
- for Great Plains soils, (39) 812.

Dynamometer—

- for steam plows, description, (30) 389.
- traction, description and tests, (33) 890.

Dynamos and motors, treatise, (29) 892.**Dyomyx, notes, (34) 855.****Dyscedestis farinattella, notes, (34) 855.****Dyscinetus—**

- bidentatus, notes, (38) 459.
- spp., notes, (36) 753.

Dysdercus—

- albidiventris, notes, (37) 847.
- andreae, notes, (30) 356; (39) 862.
- cingulatus, injurious to kapok, (26) 354.
- delaneyi—

- investigations, (36) 654.
- life history and remedies, (38) 461.
- notes, (39) 559, 638; (40) 165.

howardi, studies, (26) 454.**nigrofasciatus, notes, (28) 654.****ruficollis, notes, (27) 54.****ruficollis, parasite of, (29) 358.****scassellatii, notes, (40) 854.****spp. on cotton, (27) 454; (39) 754, 862.****sutrellus, see Cotton stainer.****Dysentery—**

- amebic, in horses, (27) 477.
- amebic, transmission by flies, (38) 563.
- amoebae, notes and bibliography, (26) 246.
- chronic bacterial, see John's disease.
- epidemic, relation to flies, (36) 156.
- in bees, notes, (26) 561.
- calves, studies, (26) 483, 682.
- farm animals, treatment, (27) 181.
- newborn calves, (40) 887.
- red, of cattle, (40) 290.
- spontaneous amebic, in monkeys, (36) 576.
- toxins and antitoxins, notes, (26) 676.
- transmission by house flies, (26) 61.

Dytiscus—

- destructive to mosquito larvae, (38) 766.
- marginalis, digestive ferments of, (26) 657.

Dyttopasta yumaella, notes, (28) 451.**Eagles of France, treatise, (26) 452.****Eantis thraso, notes, (39) 59.****Ear diseases, (27) 576.****Ear tick—see Ornithodoros megnini.****spinose—**

- in South Africa, (39) 81.
- life history and habits, (37) 856.
- notes, (37) 255; (40) 656.
- remedies, (40) 682.

Earflies, notes, (29) 454.**Earias—**

- chlorana, notes, (29) 853.
- fabia, injurious to kapok, (26) 354.
- insulana—
- control, (40) 256.
- notes, (27) 862; (28) 654; (32) 847.
- relation to pink bollworm, (40) 857.
- seasonal variation in, (32) 152.
- studies, (37) 55.
- spp. and Rhogas parasite in India, (38) 54.

Earth—

- internal structure, (34) 614.
- pressure, treatise, (35) 786.

Earthquake—

- in Alabama, (36) 719.
- in Missouri, (37) 513.
- in North Carolina, (36) 19.
- observations in a telescope, (35) 419.
- of July 1, 1911, (26) 27.
- southern Appalachian, of February 21, 1916, (35) 419.

Earthquakes in—

- California in 1915, (35) 116.
- California in 1916, (38) 115.
- 1916, (36) 719.
- Philippines, (31) 615.
- United States, (34) 615.

Earth's electric charge, (35) 115.**Earths, rare—**

- and their acids, treatise, (30) 205.
- in soils, (31) 720.

Earthwork haul and overhaul, treatise, (30) 487.**Earthworms—**

- aeration of soils by, (26) 619.
- effect on soil fertility, (27) 518.
- in forest soils, (26) 223.
- in Indiana, (36) 251.
- of North America, (40) 267.
- parasites of, (36) 359.
- relation to agriculture, (30) 425.
- relation to Dictyocaulus filaria, (28) 182.
- remedies, (32) 246.
- transmitting nematodes to fowls, (38) 83.
- treatise, (28) 451.

Earwig—see Forficula auricularia.**European, life history and remedies, (38) 56.****European, notes, (39) 464.****East coast fever, see African coast fever.****East Park bird reservation, California, (37) 355.****Eccoptogaster, see Scolytus.****Ecdytolopha insitiana, notes, (35) 356.****Echelon clouds, paper on (27) 316.****Echidnophaga gallinacea, see Hen flea.****Echinacea augustifolia, nature and use, (26) 580.****Echinocactus—**

- desiccation and respiration, (40) 29, 223.
- rate and course of growth, (40) 30.
- wislizeni—
- accumulation and destruction of acid in, (34) 730.
- root habits, (26) 728.

Echinocasmus perfoliatus in pigs, (34) 480.**Echinocloa crus-galli—**

- analyses, (34) 39.
- as duck food, (30) 545.

Echinococcosis, alveolar and hydatid, (32) 271.**Echinococcus—**

- disease, diagnosis, (27) 883; (30) 781.
- veterinorum in sheep, (39) 283.

Echinocystis oregana, seeds of, (38) 410.**Echinodontium tinctorium—**

- control, (40) 842.
- new hosts for, (33) 551.
- notes, (27) 653.
- on hemlock, (40) 159.
- sporophores of, (33) 552.

Echinomyia fera, parasitic on gipsy moth, (31) 652.**Echinorhynchus—**

- canis, notes (39) 892.
- gigas, description, (34) 280.

Echinostoma piriforma n.sp. notes, (30) 785.**Echthronotopus hawaiiensis n.sp., description, (28) 63.****Eciton—**

- (Acamatus) schmitti destructive to Argentine ant, (31) 256.
- burchelli, notes, (40) 358.

Eclampsia—

- and milk fever, similarities, (27) 185.
- puerperal, see Milk fever.
- relation to anaphylaxis, (26) 375.
- serology of, (31) 180.

Ecology—

- bibliography, (29) 626.
- of Michigan dunes, (40) 226.
- of vegetation of Breckland, (40) 424.
- relation to agriculture, (30) 98.
- studies, (27) 636; (31) 537; (40) 129.

Economic—

- associations of rural Poland, treatise, (31) 690.
- conditions in Serbia, (40) 791.
- cycles, treatise, (35) 496.
- survey in southern Minnesota, (29) 489.

- Economics**—
 home, *see* Home economics.
 in agricultural education and research, (26) 386.
 rural, *see* Rural economics.
- Ecpanththeria eridanus**—
 life history, (35) 758.
 notes, (33) 554.
- Ecephylus** spp., table, (30) 758.
- Ecthetopyga gossypii** n.g. and n.s.p., notes, (29) 562.
- Ectobia germanica**, *see* *Blattella germanica*.
- Ectoedemia**—
 castaneae n.s.p., description, (29) 758.
 heinrichi n.s.p., description, (33) 655.
 phleophaga n.s.p., description, (32) 450.
 spp. in North America, (37) 564.
- Ectogony**, definition, (38) 526.
- Ectoparasites**—
 injurious to man, (34) 251.
 of rats, (27) 754.
- Ectoproteases**, properties of, (31) 377.
- Eczena**—
 epizootic, in cattle, (28) 481.
 in horses and bovines, (29) 378.
 relation to diet, (31) 463.
- Edaphism**—
 definition and application, (28) 718.
 Gola's osmotic theory, (33) 321.
- Edaphon**, monograph, (30) 323.
- Eddoes**—
 culture and use, (40) 763.
 varieties, (26) 733; (36) 735; (38) 33, 335.
 variety tests, (40) 522.
- Edema**—
 malignant, and blackleg, differentiation, (27) 182.
 malignant, in hogs, due to vaccination, (39) 392.
 of the wattles of fowls, (30) 785.
- Edessa mediatubunda**, notes, (40) 165.
- Edestin**—
 copper compounds of, (37) 9.
 determination in flour, (27) 498.
 effect on gaseous metabolism in man, (28) 569.
 hydrolysis, (28) 607.
 immunity reactions of, (30) 778.
 lysin content, (31) 559.
 maintenance experiments with, (28) 864.
 refractive indexes, (34) 803.
 tryptophan in, (28) 411.
 value for growth or maintenance, (37) 864.
- Education**—
 agricultural, *see* Agricultural education.
 at Pan American Scientific Congress, (38) 794.
 bibliography, (31) 196.
 economic value, (27) 793.
 in Manitoba, (27) 896.
 relation to agriculture, (36) 595.
 relation to mental development, (31) 557.
 rural Denmark, (31) 598.
 the home, (33) 397.
 the South, conference on, (26) 697.
 United States, statistics, (27) 797.
 Württemberg, (27) 897.
 industrial, in Oregon, (31) 97.
 relation to industry, (26) 296.
 rôle of school gardening in, (36) 94.
 secondary, science in, (26) 296.
 technical, in Canada, (31) 596.
 treatise, (33) 596.
 value to the farmer, (34) 393.
 vocational, *see* Vocational education.
- Educational**—
 ideals, changes, (26) 299.
 institutions—
 effect on development of agricultural science, (29) 191.
 higher, in Iowa, (37) 292.
 of Washington, survey, (37) 597.
 resources of village and rural communities, (31) 193.
 system of Denmark, (35) 695.
 system, state, report on, (30) 92.
- El** grass, culture for wild ducks, (33) 251.
- Elworms**, *see* Nematodes.
- Egg**—
 abnormality, (32) 870; (40) 672.
 albumin, *see* Albumin, egg.
 associations, cooperative, organization, (32) 870.
 breaking outfit, description, (27) 663.
- Egg**—Continued.
 breaking plants, (39) 379.
 conserves, artificial coloration, (27) 809.
 conserves, methods of analysis, (32) 109.
 demonstration train in North Wales, (30) 495.
 diet, anaphylaxis due to, (32) 178.
 industry in United States, (29) 774.
 laying contest—
 at Munster Institute, Cork, (31) 569.
 at Vineland, N. J., (37) 71; (38) 677; (39) 780.
 in British Columbia, (34) 470.
 Connecticut, (29) 70; (30) 271; (33) 672; (36) 570; (37) 368.
 Kentucky, (35) 673; (39) 480.
 Missouri, (34) 869.
 Queensland, (38) 173.
 laying contests—
 average and frequency curves in, (33) 271.
 farm-flock, in Missouri, (40) 876.
 in Australia, (27) 876; (29) 275, 472, 672; (33) 673, 872.
 England, (31) 472; (33) 572; (38) 72.
 England and Australia, (26) 369.
 Ireland, (38) 172; (40) 671.
 New South Wales, (26) 270; (30) 773; (37) 72.
 South Australia, (26) 876; (31) 871.
 United States, (33) 872.
 notes, (28) 369; (29) 696.
 laying in different breeds of poultry, (32) 868.
 laying records, (27) 374; (30) 675, 873.
 marketing packages, description, (30) 873.
 membranes, ovarian, permeability, (26) 671.
 noodle tables, recalculation, (26) 99.
 pastes, judging, (29) 564.
 powder, nutritive value, (35) 368.
 preservative, analyses, (29) 661; (38) 666.
 production—*see also* Hens, laying.
 and handling, (33) 299, 872.
 and marketing, (26) 78.
 and yellow pigment in fowls, correlation, (33) 172.
 production as affected by—
 hatching date, (39) 275; (40) 772.
 inbreeding, (33) 572.
 pituitary substance, (34) 75.
 production—
 breeding for, (29) 472, 696, 874; (32) 172; (36) 693; (38) 172; (39) 781.
 computation of correlation coefficients, (40) 871.
 cycles in birds, (37) 869.
 diurnal time, (40) 77.
 external characters as indications of, (35) 480.
 feeding for, (33) 97, 672; (34) 377; (38) 577.
 for war emergency, (38) 94.
 illustrated lecture, (34) 196.
 improvement, (33) 98, 271, 273; (34) 870; (37) 871.
 in Belgium, (31) 65, 161.
 Canada, studies, (27) 773.
 Rhode Island Red fowls, (38) 876.
 United States, (31) 168.
 increasing, (27) 72, 773, 774.
 inheritance in hens, (33) 471; (34) 74, 564.
 limitations of, (30) 471.
 of champion hens, (30) 873.
 of different breeds, (32) 572; (34) 569.
 of February-hatched pullets, (34) 377.
 on the farm, (39) 176.
 physiology, (32) 870; (36) 73.
 production, relation to—
 brooding instinct, (33) 74.
 molting, (40) 77.
 phosphorus in rations, (30) 71.
 pigmentation, (38) 276; (39) 378.
 size of eggs, (35) 773.
 production—
 rhythm of, (33) 574.
 selection for, (33) 173; (38) 276; (39) 74, 480, 675.
 studies, (26) 572, 770; (27) 773; (28) 367, 570, 577; (30) 373; (31) 668, 669; (32) 73; (34) 176, 869; (35) 274, 773; (36) 173; (37) 369, 869; (38) 171, 172, 373; (39) 480; (40) 876.
 winter, (29) 574; (32) 869; (33) 574; (36) 669; (38) 497.
 winter cycle in, (34) 470.

Egg—Continued.

products—

- bacteriology, (28) 164.
- Chinese, notes, (30) 675.
- preservation, (27) 663.
- proteins, digestibility and utilization, (35) 861.
- record of a Leghorn hen, (28) 270.
- records, individual, (39) 278.
- shows, value of, (35) 274.
- societies in England, (32) 792.
- substitutes—
 - analyses, (35) 470; (39) 68, 669.
 - baking experiments, (39) 68.
 - description, (28) 862.
 - descriptions and analyses, (40) 558.
 - examination, (31) 760.
- trade, wholesale, of Berlin, (28) 270.
- white, digestibility, (26) 263.
- white, effect on creaming ability of milk, (36) 76.
- yolk—

- antineuritic substance from, (37) 308.
- lutein in, (26) 533; (27) 611.
- metabolism during incubation, (37) 772.
- osmotic phenomena of, (31) 357.
- phosphatids, studies, (30) 163.
- preservation and use, (29) 564.
- prevention of beriberi by, (31) 762.
- role in glycogen formation, (31) 763.
- white and yellow, composition, (37) 772.

Eggplant—

- canker or rot, notes, (27) 849.
- diseases, notes, (39) 52, 453, 852.
- early blight, notes, (38) 451.
- fruit rot, leaf spot, or stem blight, studies, (31) 747.
- fruit rots, studies, (31) 344; (32) 843.
- grafting on *Solanum torbium*, (33) 139.
- lace bug, studies, (33) 355; (38) 858.
- Phomopsis, notes, (35) 844.
- seedlings, breaking over, (39) 454.
- tortoise beetle, studies, (36) 57.
- Verticillium wilt, studies, (33) 244.
- wilt disease, notes, (31) 343.

Eggplants—

- breeding experiments, (27) 741; (30) 343; (36) 839; (39) 747; (40) 538.
- color inheritance, (38) 443.
- crossing experiments, (34) 146.
- culture experiments, (35) 341; (37) 742.
- fertilizer experiments, (37) 742.
- fruit thinning experiments, (27) 741.
- Gnomonia on, (37) 752.
- heredity in, (27) 740; (28) 740; (30) 343; (32) 538.
- insects affecting, (36) 354.
- irrigation experiments, (29) 638.
- limitation studies, (34) 146.
- new fruit disease affecting, (27) 152.
- red spider attacking, (39) 65.
- storage, (39) 745.
- varieties, (34) 146.

Eggs—

- abnormal, (33) 793.
- alcoholized, mortality of chicks from, (40) 470.
- artificial incubation, (26) 270.
- as affected by quinin feeding, (40) 664.
- as food, (28) 459.
- as protection against pellagra, (33) 565.
- ash analyses, (29) 861.
- bacterial content and keeping quality, (32) 172.
- bacterial flora of, (26) 168.
- bacterial infection of, (33) 764.
- bacteriology, (27) 61, 73, 374; (28) 164; (31) 171.
- boron in, (30) 168.
- candling, (39) 279, 881.
- care, (28) 369, 395.
- care and marketing, (30) 773.
- care on the farm, (32) 763.
- changes in during incubation, (30) 170.
- changes in during storage, (32) 854.
- characteristics, (38) 577.
- chemistry and bacteriology of, (28) 860; (31) 570.
- chemistry of, (26) 258.
- Chinese preserved, analyses, (36) 362.
- cholesterol metabolism of during incubation, (33) 472.
- classification, (31) 759, 770.
- classification at New York, (27) 572.
- cold storage of, (26) 369.
- cold storage, statistics, (28) 869.

Eggs—Continued.

- collection and grading, (26) 271.
- color xenia and teleonomy in, (34) 569.
- composition, (34) 569.
- composition relation to vitality of the chick, (32) 869.
- composition, seasonal variation in, (31) 271.
- cost of—
 - cold storage, (27) 164.
 - distribution, (29) 492.
 - production, (31) 472, 473; (33) 763; (37) 871; (38) 373.
- decomposition, (27) 763; (29) 765.
- demonstration car work, (33) 273.
- desiccated, bacterial content, (33) 362.
- desiccating, (32) 264.
- detection in foodstuffs, (30) 112.
- detection in pastes, (40) 205.
- deterioration, (26) 154, 270; (29) 276.
- determination—
 - in food pastes, (33) 502.
 - of decomposition in, (33) 112.
 - of nitrogen in, (39) 715.
- determining age, (39) 278.
- development, (33) 793.
- development as affected by narcotics, (26) 772.
- digestibility, (27) 108.
- double- and triple-yoked, occurrence, (31) 170.
- double-yoked—
 - notes, (27) 573.
 - origin, (29) 69.
 - production, (32) 771.
 - studies, (37) 371.
- dried, examination, (26) 660.
- drying, (28) 165.
- ducks—
 - preservation in China, (36) 362.
 - toxicity, (33) 163.
- duration of fertility, (26) 270.
- dwarf, studies, (36) 73, 473.
- early development in hens, (26) 271.
- effect of X-rays on fermentation, (27) 231.
- effect on bacterial content of ice cream, (32) 660.
- enzymes of, studies, (28) 64.
- evaporation in cold storage, (29) 276.
- examination, (33) 164.
- exportation from Bulgaria, (27) 279.
- factors affecting weight, composition, and hatchability, (31) 270, 869.
- fall and winter production, (36) 195.
- fatty acids of, (30) 675.
- fertile, immunity against bacterial infection, (29) 159.
- fertility, (26) 770; (27) 73; (31) 472; (36) 71.
- fertility experiments, (29) 574; (35) 377; (37) 682; (38) 677.
- fertilization and incubation of, (26) 876.
- food value, (32) 854.
- food value and uses, (36) 761.
- for hatching—
 - production, (36) 871.
 - shipping, (33) 763; (36) 70; (37) 682; (38) 677.
- formation of hydrocyanic acids in, (30) 802.
- fresh, bacterial infection, (35) 174.
- frozen and desiccated—
 - deterioration, (27) 61.
 - healthfulness, (27) 62.
 - preparation, (27) 663; (35) 173.
- frozen, examination, (32) 357.
- grading, (27) 374.
- grading, breaking, and mixing, (28) 165.
- handling—
 - and marketing, (27) 572; (32) 252.
 - through the creamery, (27) 179.
- hatchability, (34) 178; (40) 77.
- hatching, Chinese incubator method, (30) 572.
- importation from China, (31) 76, 370.
- improving quality of, (29) 472; (34) 179.
- increasing size of, (29) 574.
- incubated, formation of δ -lactic acid in, (28) 564, 711.
- incubating—
 - carbon dioxide thrown off by, (33) 575.
 - metabolism of, (26) 877.
- incubation, (31) 173; (36) 871; (38) 796, 876; (39) 75, 481, 781; (40) 372, 671.
- incubation experiments, (28) 773; (29) 275; (32) 868; (33) 763; (34) 179; (36) 770.
- infected, toxicity, (35) 264, 481, 683.
- infection by pathogenic bacteria, (35) 264.

Eggs—Continued.

- infertile, production, (37) 573.
 - judging, (29) 395.
 - marketing, (26) 271; (27) 773; (28) 599, 773; (29) 875; (32) 273, 673.
 - marketing—
 - cooperatively, (26) 92; (28) 669; (32) 870; (34) 178; (38) 392.
 - in Canada, (38) 294.
 - in Ontario, (29) 70.
 - in Wisconsin, (28) 593.
 - through creameries, (33) 294.
 - meaning of size, (34) 770.
 - methods of analysis, (32) 109; (33) 258.
 - monthly receipts, (26) 94, 190, 491, 595; (28) 871.
 - mycology of, (26) 355.
 - natural incubation, (39) 781.
 - nest, (37) 70.
 - nutritive value, (31) 65, 161.
 - of hybrid ducks, nonfecundity, (29) 167.
 - opened, grading, (40) 372.
 - osmotic activity in, (27) 811.
 - ostrich, (39) 781.
 - ovomucoid and sugar in, (28) 65.
 - packing, (38) 94.
 - partly incubated, shipping, (38) 677.
 - photographic examination, (40) 115.
 - pigeons—
 - bilaterality of, (28) 668.
 - sexual differentiation, (33) 272.
 - preservation, (26) 270, 369; (27) 374, 663, 674, 763; (28) 359, 694; (29) 172, 765, 875; (30) 271; (31) 76; (32) 470, 854, 870; (33) 299; (34) 470; (35) 396; (36) 870; (37) 268, 473, 668, 682; (38) 867; (39) 379, 780, 781.
 - preservation in China, (29) 59.
 - preserved, bacteria in, (33) 764.
 - prices—
 - as affected by cold storage, (28) 871; (35) 589.
 - in Chicago, (32) 490.
 - in Ireland, (31) 96.
 - purin content, (40) 205.
 - refrigeration, (27) 461; (28) 563; (33) 660.
 - relation between spoiling and age, (31) 759, 770.
 - seasonable variation in quality, (34) 669.
 - selection for incubation, (33) 77.
 - shipping, (26) 271.
 - shipping—
 - associations, (33) 91.
 - by parcel post, (31) 370; (32) 572; (38) 72; (39) 780.
 - by parcel post and express, (37) 682.
 - from New Zealand to Vancouver, (29) 70.
 - in carlots, (39) 378.
 - standardizing, (38) 298.
 - statistics, (31) 165.
 - statistics in United States, (28) 390; (33) 894.
 - storage, (32) 356; (39) 770.
 - structure and composition, (32) 854.
 - structure and quality, (32) 870.
 - supervision and marketing, (31) 357.
 - supply and consumption in Ithaca, N. Y., (33) 572.
 - tanners', denaturation, (27) 62.
 - testing, (31) 173.
 - time required to fertilize, (26) 470.
 - turning by the incubating hen, (26) 772.
 - use in the dietary, (29) 862.
 - variations in, (31) 569, 669.
 - weight in relation to dimensions, (36) 73.
 - weight in relation to rations, (34) 179.
 - weight of, (33) 672, 673; (36) 570.
 - weight of parts, (26) 503.
 - weights and measurements, (29) 275.
 - white v. brown shelled, (39) 376.
- Eggshell color, studies, (36) 870; (39) 781.
- Eggshells—
 - analyses, (38) 626.
 - in fowls as affected by male parent, (32) 263.
 - penetration by microorganisms, (29) 765.
 - structure, (29) 276.
- Egrets, protection, (38) 556.
- Ehretia hottentotica, analyses and digestibility, (27) 871; (32) 167.
- Eichhornia speciosa, stomatal movement in, (26) 627.
- Eight-spotted forester, notes, (37) 158, 255.

Eimeria—

- avium, morphological study, (37) 280.
 - avium, notes, (26) 588; (27) 760; (30) 586.
 - spp., notes, (26) 483; (32) 180.
 - spp., studies, (30) 759.
 - stiedae as cause of coccidiosis in calves, (38) 183.
 - stiedae, parasitic in liver of dogs, (37) 280.
 - zurni-rivolta, studies, (40) 290.
- Einkorn—
 - milling and baking tests, (40) 234.
 - temporary roots in, (35) 135.
 - varieties, (27) 137; (32) 528.
- Elaphidion—
 - mite, notes, (28) 858; (31) 58.
 - villosum, notes, (28) 156; (33) 58; (34) 752; (38) 157.
- Elasmidae of Australia, (28) 563; (39) 154.
- Elasmopalpus lignosellus—
 - notes, (39) 765.
 - studies, (37) 851.
- Elasmus—
 - apanteli n.sp., description, (31) 355.
 - aspidiscae n.sp., description, (34) 556.
 - mordax n.sp., description, (36) 556.
- Elatér segetis, notes, (34) 757.
- Elatér larvæ, remedies, (31) 852.
- Elatéridae—
 - of Brazil, (35) 261.
 - phylogeny, (38) 564.
- Elder—
 - barium in, (26) 432.
 - cork from, (31) 312.
 - frost injuries, (29) 547.
 - leaves, composition, (31) 312.
 - marsh, analyses, (34) 39.
 - notes, (30) 145.
- Elderberries, culture experiments, (32) 540.
- Electric—
 - cooking—
 - appliances, (31) 856; (40) 559.
 - economics of, (35) 267.
 - tests, (27) 65.
 - current—
 - cost of, (30) 88.
 - effect on concrete, (28) 589.
 - effect on transmission of excitation in plants and animals, (34) 29.
 - use in soil analysis, (26) 519, 520.
 - equipment and transmission, treatise, (37) 287.
 - equipment for farms, (36) 400.
 - heater for ether extraction, (27) 508.
 - heater for orchards, (39) 46.
 - heating, treatise, (37) 387.
 - heating units and ranges, descriptions, (36) 562.
 - incubator for bacteriological work, (29) 222.
 - light and power for rural service, (34) 488; (36) 890.
 - lighting—
 - for farms, (27) 90, 455, 589; (30) 89, 388; (36) 590.
 - for farms, treatise, (27) 388.
 - plants, storage batteries in, (27) 790.
 - motors—
 - connecting for direct drive, (30) 190.
 - cost of operation, (27) 485.
 - for irrigation pumping, (33) 186.
 - for pumps, (39) 87.
 - niagaras, use against hall, (30) 511; (34) 208.
 - oven, description, (29) 567.
 - ovens, notes, (34) 460.
 - paragrèles, (31) 615.
 - plowing, (39) 88.
 - power plant at Powersite, Mo., (28) 716.
 - power, rural distribution of, (30) 589.
 - response in cotton plants, (29) 27.
 - service, rural, in Wisconsin, (37) 189.
 - slag, fertilizing value, (27) 725.
 - stimulus, application to animal life, (30) 674.
 - substations, cooperative in Denmark, (28) 487.
- Electrical conductivity—
 - in plants, (30) 523.
 - in plants, measurement, (33) 626.
 - of solutions, measurement, (36) 503.
- Electricity—
 - agricultural, treatise, (26) 893.
 - atmospheric, effect on plants, (30) 430; (40) 424.
 - atmospheric, variations at sunset and sunrise, (36) 419.

Electricity—Continued.

- effect on—
 absorption by plants, (32) 328; (35) 223.
 germination of seeds, (31) 427.
 growth of chickens, (30) 873.
 plant growth, (27) 28; (28) 227, 228, 529, 530, 827; (30) 225, 524, 788, 821, 827, 828; (31) 189, 428; (36) 227; (37) 336; (38) 525, 526.
 plant respiration, (31) 33.
 plants, (28) 326, 428.
 respiration of germinating seeds, (28) 732.
 seed germination, (26) 131.
 trees, (28) 340; (31) 153; (32) 428.
 fixation of nitrogen by, (28) 522; (32) 125.
 for country houses, (31) 591.
 farms, (26) 91; (29) 184; (30) 388, 891; (32) 589, 885; (37) 387; (38) 791.
 farms in Ontario, (30) 493; (33) 488.
 farms, treatise, (30) 589; (33) 690.
 irrigation pumping, (27) 86, 483; (34) 86; (35) 386; (37) 281, 786.
 plowing, (31) 591.
 pumping, (32) 87.
 rural districts, (30) 788, 892; (32) 885.
 threshing, (32) 282.
 forcing of plants by, (26) 136.
 of atmospheric precipitation, (34) 413.
 prevention of accidents in use of, (30) 690.
 production by wind power, (27) 388; (29) 184, 788; (34) 191.
 relation to threshing machine fires, (32) 86.
 societies, farmers' cooperative, (35) 794.
 static, effect on sugar beets, (27) 500.
 sterilization of milk by, (29) 580; (30) 776; (31) 175; (32) 77, 269; (33) 78; (35) 175, 378.
 use in—
 agriculture, (26) 789; (27) 89, 292, 388, 484, 485, 790, 891; (28) 290, 533; (30) 88; (33) 690, 890; (34) 87, 287, 686.
 cafeteria cooking, (34) 861.
 cooking, (27) 463; (28) 167; (33) 67, 68, 461, 565.
 cooking and heating, (30) 166, 862; (32) 65; (35) 558; (36) 763.
 dairies, (27) 690.
 greenhouses, (30) 488.
 hail protection, (31) 416.
 ice harvesting, (28) 187; (30) 892.
 irrigation, (28) 289; (33) 584, 589.
 v. horsepower for threshing, (28) 591.
 v. steam for filling silos, (32) 590.
 v. steam for threshing, (28) 685; (30) 590.
 v. steam in drainage pumping, (31) 890.
 waterfall, (34) 414.
 Electro Bordo Pulp, analyses, (31) 142.
 Electrocardiogram—
 of embryo chicks, (31) 173.
 of horses, (30) 784.
 Electrochemistry, treatise, (26) 818.
 Electroculture—
 experiments, (33) 827; (34) 727; (35) 524; (39) 230, 616, 735; (40) 147, 428, 429.
 experiments—
 at Halle, (27) 231.
 distribution of overhead discharge wires in, (32) 486.
 in Prussia, (27) 531.
 résumé and methods, (30) 33.
 review of literature, (33) 690.
 studies, (28) 326.
 Electrolysis, in chemical industry, (40) 109.
 Electrolyte solutions, effect on germination, (29) 218.
 Electrolytes—
 absorption and excretion by, lupines, (32) 824.
 effect on—
 coagulation of clay suspensions, (31) 618.
 germination of seeds, (37) 431.
 hydrolysis of starch by malt amylase, (37) 613.
 permeability of plant cells, (27) 732.
 seeds, (33) 727.
 exosmosis from plant tissue, (34) 731.
 measuring conductivity, (34) 732; (38) 523.
 rôle in action of animal ferments, (27) 712.
 synergetic action, (39) 630.
 Electrolytic apparatus, platinum substitute for, (40) 109.
 Electrometric titrations of solutions containing protein, (39) 611.

- Electromotive phenomena in plants, (26) 227; (28) 731; (32) 522; (36) 732.
 Eleocharis palustris, digestibility, (32) 770.
 Eleodes—
 omisa borealis, notes, (30) 161.
 spp., investigations, (27) 260.
 sulcipennis, notes, (27) 561.
 tricostata, notes, (39) 363, 565.
 Eleodipha n.g. and n.spp., descriptions, (40) 653.
 Eleolite as a source of potash, (26) 426.
 Elephant grass—
 composition and culture, (36) 230.
 notes, (30) 527.
 Elephantorhiza elephantina, culture experiments, (37) 730.
 Elephants, domestication in Belgian Congo, (34) 376.
 Eleusine—
 coracana—
 analyses, (38) 368.
 analyses and digestibility, (28) 464.
 culture experiments, (32) 227; (38) 135.
 notes, (27) 32; (30) 229.
 indica, analyses, (28) 463.
 spp., notes, (26) 361.
 Eleutheroda dytiscoides in Hawaii, (34) 59.
 Elevator—
 dust, analyses, (38) 666.
 hay and grain, description, (30) 690.
 Elevators—
 cooperative—
 accounting system for, (33) 192.
 grain, in Iowa, (32) 593.
 in Minnesota, (32) 688; (34) 392; (36) 790.
 warehouse, in Wisconsin, (28) 593.
 farmers', in Ohio, (40) 592.
 Government operation, (40) 688.
 grain, fumigation, (30) 155.
 grain, in Canada, (32) 894; (33) 492.
 local and terminal, (35) 296, 393.
 Elidinae, studies, (28) 455.
 Elimoea appendiculata, notes, (31) 249.
 Ellis—
 atriventris n.spp., description, (31) 355.
 spp., introduction into Mauritius, (39) 869.
 spp., parasitic on May beetles, (31) 458.
 Elk—
 book on, (38) 53.
 in Jackson Hole, Wyo., (26) 652.
 Elm—
 analyses and nutritive value, (35) 164.
 aphids, notes, (30) 854.
 aphid, woolly, notes, (39) 258.
 bark beetle, European smaller, notes, (27) 255.
 bark beetle, studies, (27) 658.
 beetle, notes, (27) 857.
 blight, notes, (28) 246.
 borer, notes, (27) 256, 658; (28) 653; (29) 252.
 case bearer, European, notes, (28) 158; (37) 255.
 caterpillar, spiny, notes, (28) 158.
 cluster louse and woolly apple aphid, identity, (34) 357.
 forcing experiments, (38) 443.
 gall louse, notes, (27) 658.
 leaf aphids, notes, (29) 654.
 leaf beetle—
 biology and control, (39) 564.
 life history, (36) 461.
 notes, (26) 147; (27) 554, 658, 755; (28) 57, 158, 351, 752; (30) 153, 655, 656; (33) 153, 253; (34) 752.
 remedies, (29) 556.
 reproduction in, (32) 351.
 leaf curl, notes, (27) 555; (28) 251.
 leaf miner, life history and remedies, (29) 557.
 leaf miner, notes, (27) 658; (28) 351.
 leaf rosette, studies, (36) 755.
 leaf spot, notes, (27) 349.
 plant louse, notes, (27) 755.
 pouch gall, English, notes, (33) 253.
 root diseases, notes, (30) 147.
 sawfly leaf-miner, notes, (28) 57.
 sawfly, notes, (28) 554.
 scale—
 European, notes, (28) 353; (29) 158, 251; (40) 161.
 European, prevalence in California, (27) 358.
 notes, (26) 856.
 scurfy scale, notes, (26) 147.

- Elm**—Continued.
seed oil, characteristics and feeding value, (29) 110.
snout beetle, reddish, notes, (27) 256.
tree beetle, destruction by English sparrows, (38) 457.
tree louse, woolly, notes, (27) 658.
tree, notable, (28) 395.
twig disease, description and treatment, (27) 451.
- Elms**—
as host plant of apple aphids, (30) 548.
carpenter worm affecting, (31) 550.
dying, (27) 255; (28) 345, 853.
growth observations, (28) 344.
insects affecting, (30) 455.
nutrient absorption in, (32) 748.
utilization, (39) 546.
- Elodea**—
canadensis, precipitation of iron by, (26) 326.
leaves, parasitic bacteria on, (26) 552.
- Elaphidae**, new genus from United States, (35) 857.
- El-R'och**, notes, (28) 782.
- Elytrosan**, tests, (28) 380.
- Embankments**, preventing erosion of, (28) 736.
- Embolism**, encranial stronglygenic, notes, (29) 478.
- Embryo sac**—
as a colloidal system, (36) 526.
development in citrus fruits, (28) 524.
- Embryology**—
discussion, (27) 175.
notes, (26) 365.
of chicks and pigs, pamphlet, (29) 371.
treatise, (26) 876.
- Embryomas** in plants, (38) 752.
- Embryonic development**, control, (27) 274.
- Emersonopsis**, erection, (36) 859.
- Emetin**, germicidal action, (38) 180.
- Emigration** from Roman Tuscany, (33) 492.
- Emmer**—
culture—
and variety tests, (40) 333.
at Belle Fourche, (40) 332.
experiments, (28) 532; (29) 225; (32) 132, 526, 529, 530; (33) 633; (34) 137; (35) 527; (36) 32, 34, 133, 830; (37) 330; (38) 634; (39) 735.
in eastern Oregon, (32) 730.
Indiana, (40) 735.
sand hills of Nebraska, (35) 827.
South Dakota, (39) 739.
southern Idaho, (36) 227.
Texas Panhandle, (29) 429; (35) 440.
Wyoming, (38) 527.
under dry farming, (36) 528, 529.
under irrigation, (34) 528.
fall-sown, in Maryland and vicinity, (36) 736.
hardiness, relation to sap density, (39) 430.
milling and baking tests, (40) 234.
milling and bread making qualities, (28) 458.
Prussian and other forms of, (35) 441.
seeding experiments, (29) 225; (40) 334.
series of wheat varieties, (40) 636.
temporary roots in, (35) 135.
varieties, (26) 39; (27) 32, 137, 334, 736; (29) 222, 225, 425, 428; (30) 135; (32) 334, 431, 527, 528; (33) 34; (34) 733; (35) 228, 229; (36) 32, 33, 132, 634, 830; (37) 332, 530, 641; (38) 634.
varieties for Utah dry lands, (38) 230.
variety tests, (39) 228, 738.
wild, discovery in Asia Minor, (28) 761.
winter, studies, (26) 132.
yields, (27) 734; (39) 333.
- Emmesomyia** n.g. and n.spp., notes, (38) 659.
- Emodin**-bearing drugs, identification, (37) 509.
- Emperorrhinus defoliator** n.s.p., description, (35) 365.
- Empor bombiformis**, life history, (26) 657.
- Emphysema**, pulmonary—
cause and treatment, (26) 486; (27) 576.
in cows, (29) 287.
- Emphytus**—
braccatus, notes, (30) 857.
cinctus, notes, (35) 54.
filiformis, relation to oak mildew, (30) 544.
- Empidonax**—
spp., feeding habits, (27) 57.
trillii brewsteri n.spp., studies, (39) 556.
- Empoa rosae**—see also *Typhlocyba rosae*.
in Nova Scotia, (38) 156.
life history and habits, (38) 859.
- Empoa rosae**—Continued.
life history and remedies, (39) 61.
notes, (32) 651; (35) 853.
- Empoasca**—
australis n.s.p., description, (40) 261.
mali, see *Apple leafhopper* and *Potato leafhopper*.
obtusa, description, (35) 255.
sp. affecting pecan, (38) 762.
trifasciata, early stages, (39) 360.
unicolor as apple pest, (40) 57.
unicolor, life history and habits, (38) 859.
- Empria**—
fragariae n.s.p., description, (33) 258.
spp., studies, (34) 758.
- Empusa**—
aphidis, investigations, (26) 454.
aulicae, notes, (29) 855.
elegans n.s.p., studies, (31) 251.
grylli, affecting locusts, (26) 247.
- muscae**—
as carrier of bacterial infection, (30) 553.
destruction of flies by, (34) 254.
notes, (30) 757; (37) 764.
papatasi, notes, (35) 57.
sphaerosperma, notes, (27) 562.
spp., descriptions, (33) 459.
tampyridarum, notes, (26) 253.
- Empyemia** of facial sinuses, treatment, (40) 181.
- Empyreuema lichas**, notes, (36) 355.
- Emulsin**—
as affected by heat, (26) 310.
cleavage of organic acids by, (30) 503.
colloid in acorns, notes, (28) 528.
effect on—
alcoholic fermentation, (27) 426.
gentiopierin, (29) 505.
plant respiration, (27) 221, 426.
respiratory pigments of plants, (26) 327.
salicin, (27) 408; (29) 506.
in alfalfa, (32) 411.
in tobacco plant, (31) 204.
synthesizing and hydrolyzing action, (28) 609.
synthetic action, (29) 505.
- Enarmonia**—
batrachopa, notes, (31) 752.
caryana, see *Laspeyresia caryana*.
interstinctana, notes, (32) 651.
interstinctana, popular account, (39) 557.
pyricolana, notes, (40) 756.
- Encarsia**—
elegans, notes, (26) 149.
partenoepa, studies, (36) 759.
- Encephalitis**, outbreak in Kansas and Nebraska, (29) 587.
- Encephalomyelitis**—
epizootic, in horses, (30) 485.
equine, notes, (36) 780.
equine, review of literature, (31) 87.
- Enchenopa binotata**, life history, (27) 256; (34) 356.
- Enchiladas**, preparation, (27) 665.
- Encyrtidae**—
new genera and species, (39) 154.
polyembryony, (40) 653.
- Encyrtinae**—
new genera and species, (40) 359.
new species, descriptions, (26) 254.
- Encyrtus**—
mayri, studies, (28) 560; (36) 759.
sericophilus n.s.p., description, (27) 865.
- Endive**—
forcing, (36) 443.
greenhouse-grown, (39) 748.
liming experiments, (40) 134.
mulching experiments, (38) 344.
mulching v. clean culture, (33) 534.
rot, description, (36) 648.
- Endoblastoderma salmonicolor**, assimilation of atmospheric nitrogen by, (30) 629.
- Endocardial lesions** in horses during pneumococcus infection, (40) 784.
- Endocrine gland extracts**, effect on milk production, (37) 173.
- Endometritis**—
effect on milk, (32) 479.
in cattle, studies, (28) 586.
- Endomyces hylecoeti**, notes, (28) 858.
- Endoparasites**—
in Queensland, (39) 556.
of rats and mice, (27) 754.

- Endophylloides portoricensis* n.g. and n.sp., notes, (37) 552.
- Endophyllum**—
 n.sp., description, (32) 749; (33) 647.
 new combinations, (37) 552.
 sempervivi, life history, (30) 745.
 sempervivi, studies, (28) 845.
- Endosperm**, effect on development of plants, (29) 421, 629.
- Endothia**—
 gyrosa distribution in America, (33) 52.
 gyrosa parasitica, studies, (29) 552, 753.
 havanensis, studies, (37) 353.
- parasitica**—
 and related species, (36) 548.
 as affected by tannin, (36) 149.
 ascospore expulsion in, (32) 346; (35) 154.
 description and treatment, (29) 451.
 discussion, (40) 159.
 dissemination, (31) 451; (32) 55; (33) 56.
 effect of continuous desiccation on, (34) 56.
 effect of dyes on, (39) 153.
 hosts of, (33) 854.
 in China, (29) 753.
 in Japan, (34) 848.
 in southern Indiana, (35) 551.
 longevity of pycnosporos and ascospores, (33) 249.
 morphology and life history, (31) 246.
 notes, (30) 456, 543, 751; (31) 845; (36) 150.
 persistence of pycnosporos, (34) 546.
 studies, (29) 156; (31) 751; (33) 551; (37) 557.
 threatening Pacific States, (34) 354.
 transmission by insects, (34) 853.
pseudoradicialis n.sp., description, (30) 52.
- radicalis**—
 on *Pasania* sp. in Japan, (34) 848.
 relation to *Diaporthe parasitica*, (27) 451; (28) 551.
 studies, (29) 156, 351.
 spp. as affected by ether, (35) 250.
 spp., pigments, (38) 225.
 spp., relation to tannin content of host plants, (32) 646; (35) 250.
 spp., relation to *Diaporthe parasitica*, (28) 651.
 spp., studies, (29) 553.
virginiana n.sp., description, (28) 750.
virginiana, notes, (29) 651.
- Endotin**—
 tests, (26) 180.
 use against tuberculosis, (26) 284.
- Enemas**, nutrient, absorption and utilization, (34) 258.
- Energy**—
 content of extra foods, (40) 269.
 exchange in animal tissues, (33) 567.
 expenditure in walking, (26) 871, 872.
 from food products, conservation, (39) 768.
 human, rational utilization, (31) 861.
 latent and kinetic, conversion in animals, (32) 860.
 metabolism and protein metabolism, relation, (32) 563.
 metabolism as affected by—
 carbohydrates, (28) 570.
 malnutrition, (32) 664.
 overfeeding, (28) 264.
 metabolism—
 during muscular work, (32) 765.
 of fowls, (33) 472.
 of infants, (33) 464, 756.
 muscular, origin, (29) 466.
 production—
 as affected by food intake, (26) 160, 565.
 in relation to diet and body condition, (37) 469; (39) 772.
 rations, utilization by cows, (39) 75, 381.
 requirements—
 in disease, (32) 563.
 in nutrition, (39) 568.
 of infants, (39) 876.
 of man, (35) 371.
 transformations—
 in germinating seeds, (36) 525.
 in the body, (30) 466, 563.
 relation to food ingested, (40) 270.
 values of alfalfa hay and starch, (40) 365.
- Engineering**—see also *Agricultural engineering*.
 courses, disrespect of students for, (37) 893.
 experiment stations in United States, (35) 708.
- Engineering—Continued.**
 handbook, (29) 289, 893; (32) 188.
 highway, textbook, (30) 289.
 hydraulic, treatise, (33) 390.
 mechanical, reference book, (31) 287.
 meteorological data in, (28) 415.
 structural, treatise, (33) 487.
- Engines**—
 antifreezing solutions for, (34) 891.
 automobile, for power pumping, (40) 183.
 cooling, (27) 791.
 cost of fuel for, (30) 88.
 Diesel, tests, (32) 485.
 farm, handbook, (30) 89.
 for driving mechanism of binders, (27) 293.
 fuel consumption and energy utilization in, (31) 385.
 fuel oil, principles of, (28) 200; (29) 891.
 gas and gasoline, see *Engines, internal-combustion*.
 handbook, (31) 385.
 heavy oil, discussion, (30) 188.
 internal-combustion—
 adjusting, (34) 788.
 antifreeze solutions for, (40) 191.
 carburetors, adaptation to low volatile fuels, (40) 191.
 care and operation, (31) 891; (35) 391.
 chart for, (33) 890.
 compression in, (35) 494.
 construction and operation, (34) 487.
 cooler for, (36) 287.
 cooling, (30) 291.
 description, (29) 592.
 effect of compression on, (31) 890.
 efficiency formula for, (30) 590.
 exhaust gases of, (35) 791.
 explosion period in, (35) 87.
 for pumping, (32) 87.
 fuel consumption of, (31) 890.
 fuels for, (30) 690; (31) 386; (36) 399; (38) 893.
 heat balance of, (31) 290.
 in Danish agriculture, (31) 187.
 increasing output of, (33) 688.
 indicator diagrams, (31) 688.
 installing, (34) 891.
 jacket water requirements, (29) 292.
 kerosene for, (30) 892; (32) 687.
 locating troubles, (28) 787.
 lubricating oils for, (29) 892; (30) 690; (32) 86.
 lubrication, (27) 790.
 magnetos for, (38) 893.
 naphthalin for, (30) 189.
 nomenclature, (38) 893.
 notes, (30) 388; (31) 186.
 operation, (35) 188; (36) 587.
 operation and efficiency, (34) 891.
 port area and power, (38) 893.
 power variation and losses in, (31) 290.
 pressures in, (29) 892.
 running, (40) 291.
 selection and care, (27) 790.
 short-course instruction in, (36) 400; (38) 95.
 starting, (33) 589.
 steam as a by-product of, (33) 688.
 tests, (28) 384; (30) 290; (32) 281; (33) 890; (35) 889.
 treatise, (28) 84, 384; (29) 86, 184; (30) 487; (31) 92, 385, 590; (32) 788; (34) 287; (36) 287.
 use of kerosene in, (31) 187.
 utilizing waste heat of, (30) 890.
 valve mechanism, (38) 593.
 valve setting, (33) 688.
 kerosene oil, tests, (30) 88.
 oil and gasoline, for irrigation, (38) 186.
 oil, for irrigation pumping, (33) 87, 688.
 oil, fuel for and effects of altitude, (39) 792.
 oil, fuel-saving device for, (31) 385.
 oil, testing, (35) 889.
 service tests, (29) 892.
 steam, for sun power plants, (29) 787.
 steam, tests of fuel, (38) 291.
 steam v. internal-combustion, for farm power, (32) 589.
 traction and portable, uniform boiler laws for, (34) 588.
 tractor, see *Tractor engines*.
 truck and tractor, notes, (36) 588.
 two-cylinder opposed, tests, (31) 487.
 v. horses for disking and plowing, (39) 336.

English—

- Arboricultural Society, notes, (28) 795.
- hay, digestibility, (39) 171.
- sparrows, *see* Sparrows.
- Enicospilus heliothidis* n.sp., description, (30) 256.
- Enin, studies, (34) 709.
- Enkabang talow, detection, (29) 613.
- Enneapogon mollis* in Ascension Island, (39) 837.
- Ennomos magnarius*, notes, (28) 157.
- Entological—
 - Investigations, (28) 209; (34) 207.
 - station at Haro, report, (27) 540.
- Entology, textbook, (35) 744.
- Enstatite, fertilizing value, (40) 815.
- Entanebae, photomicrographs of, (29) 478.
- Entamoeba—
 - apis, injurious to bees, (26) 457.
 - coli, notes, (26) 246.
 - histolytica, transmission by flies, (38) 563.
 - spp., notes, (27) 356.
- Entodon thomsoni* n.sp., description, (30) 661.
- Enteritidis paratyphoid group—
 - differentiation, (39) 188, 587.
 - studies, (40) 478, 780.
- Enteritis—
 - bacillary, transmission by flies, (38) 363.
 - chronic, *see* Johne's disease.
 - coccidial, in chicks, (37) 182.
 - in birds, (30) 786.
 - calves, (39) 686.
 - man caused by fowl cholera bacillus, (39) 186.
 - pigs, (33) 774; (40) 784.
 - sheep, (34) 275.
- paratuberculous—
 - complement-fixing antibodies in, (31) 882.
 - in cattle, (30) 583.
- Enterohepatitis—*see also* Blackhead.
 - in fowls, studies, (26) 89.
 - notes, (26) 881.
- Enterokinase—
 - effect on generation of trypsin, (29) 662.
 - properties, (32) 858.
- Entoloma microcarpum*, association with termites, (31) 58.
- Entomoid, tests, (28) 352; (30) 156.
- Entomological—
 - accessions, notation system for, (31) 452.
 - collections for common schools, (29) 395.
 - collector's handbook, (35) 355.
 - congress, international, proceedings, (27) 656.
 - correspondence, filing, (31) 248.
 - education in United States, (40) 93.
 - instruction in agricultural colleges, (30) 298.
 - laboratories, new, in Canada, (34) 296.
 - nomenclature, treatise, (27) 551.
 - problems in South Africa, (32) 56.
 - problems in West Indies, (27) 400; (31) 452.
 - research committee of Great Britain, (30) 852.
- Society of—
 - America, (34) 400.
 - British Columbia, (31) 848; (32) 551; (34) 651; (35) 253, 755; (37) 459.
 - Nova Scotia, (35) 853.
 - Ontario, report, (30) 52; (31) 155; (36) 456.
- Entomology—*see also* Insects and specific kinds.
 - agricultural, experimental technique, (37) 355.
 - agricultural, treatise, (35) 355.
 - applied—
 - bringing to the farmer, (31) 349.
 - in United States, (31) 248.
 - scope and aims, (32) 448.
 - bibliography, (30) 52, 534, 851; (31) 349; (38) 256.
 - Canadian, bibliography, (26) 59; (27) 551; (31) 648; (33) 553; (35) 852.
 - dictionary, (31) 349.
 - economic—
 - and bird protection, (32) 847.
 - at International Congress of Zoology, (33) 450.
 - bearing of physiology on, (28) 752.
 - in America, (38) 459.
 - Barbados, (32) 551.
 - British Empire, (36) 251.
 - German Empire, (32) 847.
 - India, (27) 656.
 - Italy, (32) 847.
 - Montana, (33) 553.
 - South Africa, (29) 756.
 - Trinidad, (27) 656.

Entomology—Continued.

- economic—continued.
 - in United States, (33) 855.
 - in Western Australia, (31) 452.
 - manual, (32) 56.
 - progress in, (27) 655; (32) 97; (34) 449.
 - textbook, (33) 652.
 - elementary, textbook, (27) 898.
 - forest—
 - in United States, (27) 858.
 - textbook, (29) 853; (32) 151.
 - treatise, (30) 851.
 - handbook, (30) 851.
 - high school, notes, (31) 395.
 - imperial bureau of Great Britain, (28) 799.
 - importance of, (32) 846.
 - in public schools, (37) 459.
 - in United States, history, (27) 656.
 - in West Indies, (26) 346.
 - international congress, (27) 399.
 - life zones in, (36) 456.
 - medical—
 - and veterinary, treatise, (34) 850.
 - as factor in the war, (40) 754.
 - textbook, (30) 852.
 - treatise, (32) 846.
 - North American, bibliography, (26) 147.
 - paper on, (31) 155.
 - teaching in public schools, (35) 897.
 - textbook, (38) 93.
 - treatise, (28) 451; (29) 555; (38) 357.
- Entomophthora—
 - chromaphidis n.sp., notes, (39) 464.
 - in Hawaii, (40) 854.
 - pseudococci n.sp., description, (28) 746.
 - spp., descriptions, (33) 459.
 - tampyridarum, notes, (26) 253.
- Entomophthorae, parasitism, (32) 245.
- Entomoscelis adonidis, notes, (31) 548.
- Entomosporium—
 - maculatum—*see also* Pear and Quince leaf blight.
 - description, (26) 449.
 - notes, (34) 846; (38) 853.
 - mespili, notes, (27) 350.
- Entomothera coromanda, subspecies of, (35) 252.
- Entoromorpha intestinalis, analyses, (26) 324.
- Entorrhiza, studies and bibliography, (32) 749.
- Entylia sinuate on artichoke, (40) 58.
- Entyloma spp., life history and cytology, (26) 341.
- Environment, effect on—
 - composition of wheat, (29) 263.
 - diet, (26) 465.
 - plants, (33) 126.
- Enzym—
 - action—
 - inhibition by lime-softened water, (31) 204.
 - monograph, (39) 110.
 - nature, (27) 612, 712; (35) 203.
 - reversibility, (29) 505, 506.
 - starch as a substrate for, (36) 315.
 - studies, (29) 713; (30) 504, 806; (31) 608, 710, 761; (32) 710, 803; (34) 111; (38) 709, 802, 803; (39) 203.
 - treatise, (32) 19.
 - reactions—
 - as affected by viscosity of medium, (26) 504.
 - of milk, (32) 299.
 - synthesis, studies, (28) 729.
 - synthesis, theory of, (30) 204.
- Enzymes—*see also* Ferments.
 - as affected by—
 - carbonaceous food, (28) 727.
 - halogens, (28) 609.
 - light, (28) 110.
 - low temperatures, (33) 803.
 - behavior in after-ripening of potatoes, (26) 626.
 - chemistry of, (27) 802; (34) 502.
 - chemistry of, treatise, (30) 409.
 - cleavage of cellulose by, (28) 802.
 - coagulating, action on caseinogen, (32) 607.
 - composition and formation, (26) 309.
 - determination in sputum, (29) 782.
 - diastatic, hydrolysis of glycogen by, (29) 166.
 - diffusion from rind toward interior of cheeses, (32) 175.
 - digestive, action on intestinal parasites, (33) 478.

Enzymes—Continued.

- effect on—
 glucosids, (28) 503.
 hexose phosphate, (30) 410.
 milk held at low temperature, (31) 373.
 respiration of plants, (27) 221.
 saccharin, (26) 257.
 formation, (30) 111.
 formation and regulation by mold fungi, (31) 730.
 formation of alkali by, (30) 111.
 fungus, studies, (27) 25.
 handbook, (28) 202.
 hydrolysis of phosphorus compounds by, (29) 166.
 importance in medicine and surgery, (32) 474.
 in treatment of diseases, (31) 607.
 intracellular, studies, (32) 112.
 method of dialysis, (40) 111.
 method of purifying, (40) 408.
 of alfalfa (32) 410.
 alfalfa seeds, (28) 710.
 animal tissues, (30) 608.
 apples, (34) 201; (39) 310.
Aspergillus oryzae, (32) 710.
Aspergillus terricola, (33) 410.
Botrytis cinerea cultures, (39) 247.
 bread making, (26) 358.
 cacao, (35) 414.
 eggs, studies, (28) 64.
Fucus vesiculosus, (30) 728.
 germinating red gram, (38) 9.
 large intestine, (36) 366.
 leaves of *Salix caprea*, (31) 310.
 Linaceae, (28) 502, 503, (31) 610.
 mammary gland and milk, (32) 411.
 marine algae, (35) 25.
 milk, (26) 313.
 milk and butter, (38) 479.
 milk, filtering, (39) 713.
 normal serum, (39) 608.
 pancreatic juice, coagulation, (38) 710.
 pig ovaries, (27) 670.
 tobacco plant, (31) 204.
 washed zymine and dried yeast, (30) 504.
 yeast, proteoclastic, (39) 607.
 oxidase, notes, (34) 711.
 oxidizing, studies, (27) 502.
 oxidizing, toxicity of, (28) 443.
 peptid-splitting, in human milk, (26) 803.
 plant, studies, (32) 523; (34) 428, 731; (35) 334.
 precipitation by aluminum hydroxid, (30) 504.
 production and activity of, (34) 32.
 protective, appearance after injection of foreign substratum, (32) 112.
 protective, studies, (31) 378; (33) 385.
 proteolytic—
 action and regeneration, (30) 409.
 activity, (27) 878.
 activity in flour, (35) 265.
 as affected by phosphates, (29) 309.
 as affected by salt and cold storage, (29) 268.
 detection, (27) 803.
 distribution in animal and vegetable kingdoms, (31) 377.
 in grape must, (27) 803.
 of blood, (37) 478.
 plant, inhibitors, (37) 204.
 textbook, (38) 611.
 regeneration, (28) 408.
 relation to citrus diseases, (29) 248.
 relation to manganese, (31) 220.
 respiratory, of *Sauromatum venosum*, (28) 528.
 review of investigations, (30) 11; (39) 10.
 role in—
 blood reactions by ricin, (31) 773.
 denitrification, (32) 112.
 immunity, (40) 579.
 silage fermentation, (36) 802.
 synthesis of fats by, (26) 307; (27) 108.
 synthetic action, (31) 608.
 textbook, (32) 662.
 use in carbohydrate analysis, (35) 206, 315.
 β -Enzymes, distribution in plants, (28) 503.
Eocornarium musciola, studies, (40) 452.
Eomymar n.g. and *n.spp.*, descriptions (27) 554.
 Eosin—
 effect on animals, (28) 880.
 feeding value, (27) 378.
 toxicity toward plants, (28) 740.
 Eosinophil leucocyte, development, (30) 681.
 Eosinophilia—
 natural occurrence, (39) 585.
 notes, (34) 276.
 Eosinophils, investigations, (34) 878, 879.
Epalpus sp. (?) with intracuticular stage, (33) 157.
Epelis truncataria faxonii, notes, (31) 752; (33) 352.
 Ephemera—
 aestivalis n.s.p., description, (34) 363.
 incompletus, parasitic on rose aphids, (31) 250.
 nitidus n.s.p., description, (38) 165.
Epheles oryzae, notes, (38) 547, 848.
 Ephestia—
 cahiritella, notes, (34) 754.
 cautella, notes, (32) 151; (37) 156.
 cautella, studies, (26) 248.
 elutella, notes, (26) 354; (29) 54.
 kuehniella, *see* Mediterranean flour moth.
Epialtes, notes, (40) 760.
 Ephydra—
 gracilis, notes, (39) 362.
 macellaria, notes, (38) 363.
Epiblema tedella, notes, (34) 855.
Epicamptes macroura as a paper-making material, (34) 318.
Epicauta—*see also* Blister beetles.
 adspersa, cantharidin content, (30) 357.
 atomaria, notes, (40) 170.
 spp., injurious to potatoes, (37) 157
 spp., notes, (28) 654.
Epichloe typhina—
 notes, (30) 746.
 on *Bromus erectus*, (40) 156.
Epicoccum—
 purpurascens, fixation of nitrogen by, (27) 255.
 sp. on sweet potato, (39) 854; (40) 347.
Epiddymo-vaginalitis, infectious, in horses, (27) 888.
Epidinocarsis pseudococci n.s.p., description, (34) 456.
Epidote, solubility of lime in, (40) 812.
Epilachna—
 borealis, reflex "bleeding", (36) 58.
 corrupta, notes, (28) 853; (29) 453.
 corrupta, studies, (37) 465.
 dregel, notes, (36) 654.
 spp., injurious to potatoes, (30) 255.
 vigintioctopunctata, notes, (29) 453.
Epilepsy in guinea pigs, (35) 564.
Epilobium—
 angustifolium, textile fibers from, (32) 509.
 factors affecting development, (26) 728.
 hirsutum, fiber from, (39) 510.
 hirsutum, germination in light, (31) 323.
 hybrids of, (35) 818.
Epimechus spp., notes, (30) 357.
Epimechis wittii, parasitic on spiders, (31) 355.
Epimys ratus, history, (35) 656.
Epinephrin in fetal pituitary and suprarenal glands, (34) 675.
Epinotia—
 fasciolana, studies, (34) 852.
 nanana, notes, (34) 855.
 piceafoliana, notes, (29) 256.
Epiphanin reaction—
 notes, (26) 579; (29) 881, 882.
 studies, (28) 375.
Epiphytes—
 extreme atmospheric, nutrition, (35) 431.
 osmotic pressure of, (32) 221.
Epirrita dilutata, notes, (35) 756.
Epitetrastichus lecanii n.s.p., description, (37) 59.
Epithelioma, contagious—
 immunization, (30) 785.
 in chickens, (32) 677.
 in fowls, (30) 884; (34) 189; (35) 885; (37) 78;
 (39) 184, 687, 791.
 in quail, (37) 83.
 virus of, (31) 88.
Epitheliosis infectiosa avium, studies, (35) 283.
Epithelium, occurrence of fat in, (26) 366.
Epitetrastichus ibseni n.s.p., description, (37) 59.
Epitrix—
 cucumeris, *see* Potato flea-beetle.
 fuscula remedies, (34) 361.
 nigroaenea, notes, (37) 765.
 parvula, *see* Tobacco flea-beetle.
 sp. on castor bean, (40) 453.
 spp. injurious to horse-nettle, (35) 657.

- Epitrix**—Continued.
 spp. injurious to tobacco, (36) 355; (37) 256.
 subscrinita, notes, (37) 157.
- Epilurus indigator**, notes, (28) 755.
- Epizootics and their control during war**, (38) 287.
- Epochra canadensis**, *see* Currant fruit-fly.
- Ephrhopalus**, new genus, (39) 468.
- Epyris extraneus** n.sp., notes, (38) 557.
- Equidae**—
 digestion experiments, (31) 769; (32) 262.
 teeth, studies, (27) 674.
- Equilibria in solutions of salts**, (39) 203, 204.
- Equisetum**—
 arvense, poisoning of horses by (29) 281.
 sylvaticum, eradication, (27) 733.
- Equitation**, treatise, (28) 269.
- Equus**—
 przewalskii—
 hybrids, fertility of, (26) 163.
 notes, (27) 471.
 spp., hybrid, notes, (26) 269; (28) 68.
- Eragrostis**—
 abyssinica—
 analyses (28) 738; (32) 465.
 culture in Porto Rico, (29) 631.
 notes, (27) 32, 637.
 major, analyses, (30) 565.
 spp., analyses, (36) 334.
 spp., analyses and digestibility, (27) 871; (32) 167.
 spp., notes, (26) 361.
 spp., studies, (38) 66.
- Eranthis tiliaria**, *see* Limes, winter moth.
- Ere beans**, culture experiments, (29) 830.
- Erebus odora**, notes, (27) 756.
- Eremaeus modestus**, notes, (28) 457.
- Eremascus fertilis**, notes, (28) 562.
- Eremnus fulleri** n.sp., description, (33) 159.
- Eremocitrus**, new genus, description, (31) 237.
- Erepsin**—
 effect on catalase solutions, (33) 311.
 protein cleavage by, (36) 108.
- Erepton**, effect on dogs, (28) 568.
- Erethistes lateralis**—
 catherinensis, notes, (33) 658.
 notes, (32) 352.
- Ergates faber**, notes, (30) 249.
- Eriograph for lower extremities**, description, (30) 563.
- Ergometer**—
 bicycle—
 calorimetric calibration, (33) 757.
 description, (30) 767.
 with electric brake (27) 768.
 brake type, description, (31) 764.
- Ergot**—*see also specific host plants*.
 dissemination by insects, (27) 47.
 notes, (32) 337, 441.
 of Equidae, (34) 568.
 of oats, (27) 149.
 of wild rice, studies, (34) 444.
 toxicity toward cattle, (26) 586; (28) 80.
- Eri silk**, notes, (27) 861.
- Erianthus cay-cong**, description and use, (31) 332.
- Eriaceae**, endotrophic mycorrhiza, (39) 26.
- Eriacids**, evergreen, xerophily of, (31) 728.
- Eriacrus pela**, studies, (35) 256.
- Erichloa punctata**, analyses, (27) 469.
- Eriogon annus** and its control, (40) 738.
- Eriocampa adumbrata**, notes, (31) 848.
- Eriocampoides**—
 amygdalina, studies, (26) 152.
 cerasi, remedies, (28) 659.
 limacina, *see* Pear slug.
- Eriocera** spp., biological and systematic studies, (32) 153.
- Eriocheir japonicus** as a host of lung distome, (36) 577.
- Eriochloa**—
 punctata, analyses, (28) 463.
 ramosa, description and analyses, (31) 431.
 ramosa, notes, (26) 361.
- Eriococcus**—
 azaleae, notes, (37) 255.
 cockerelli n.sp., description, (30) 549.
- Eriopeltis coloradensis**, notes, (29) 252.
- Eriophorum vaginatum** as a source of fiber, (37) 736.
- Eriophyes**—
 calacladophora, notes, (28) 654.
 effect on maples, (40) 554.
- Eriophyes**—Continued.
 gossypii, notes, (30) 356.
 gossypii, occurrence in Barbados, (27) 60.
 malifoliae, notes, (37) 570.
 n.sp., notes, (36) 261.
 n.sp., descriptions, (30) 362.
 oleivorus, *see* Citrus rust mite.
 pruni, remedies, (40) 459.
 pyri, *see* Pear-leaf blister mite.
 quadrisetus, notes, (34) 450.
 ribis, life history, (30) 399.
 ribis, notes, (31) 853, 854.
 sp., notes, (31) 752.
 sp. on apples, apricots, and plums, (32) 551.
 sp. on poplar, (40) 359.
 spp., notes, (32) 651.
 triradiatus on willows, (33) 56.
 vitis, remedies, (26) 561.
- Eriopus floridensis**, *see* Callopietia floridensis.
- Eriosoma**—*see also* Schizoneura.
 crataegi and E. lanigera, synonymy, (39) 258.
 lanigerum, *see* Apple aphid, woolly.
 pyri, identity, (34) 854.
 pyricola, n.sp., description, (35) 463.
 pyricola, studies, (37) 661; (38) 560.
 querci, identity, (36) 551.
 spp., alternate host habits, (39) 464.
 spp., comparison, (35) 464.
 ulmi, notes, (27) 758; (29) 654.
 ulmi, studies, (38) 464.
- Eriophaeria sacchari**, notes, (40) 157.
- Erioxylon**, glands of, (39) 431.
- Eristalis**—
 aeneus, life history, (29) 456.
 sp., relation to intestinal myiasis, (28) 780.
- Ermine** moths, small, notes, (32) 754.
- Erodium**—
 bacterial disease of, (32) 53.
 cicutarium, seeding on ranges, (30) 35.
 cygnorum, analyses, (27) 469.
- Erotylidae**, catalogue, (26) 560.
- Eruca sativa**, oil content, (31) 234.
- Ervum lens**, fertilizing value, (26) 233.
- Erynnia vibrissata**, notes, (31) 251.
- Erysipelas**—
 anaphylatoxin, notes, (28) 778.
 bacilli, culture differences, (39) 287.
 diagnosis, (30) 180.
 immunization, (29) 176.
 in hogs, *see* Hog erysipelas.
 in pigeons and ducks, (39) 287.
- Erysiphaceae**—
 characteristics, (30) 537.
 formation of conidiophores, (27) 351.
- Erysiphe**—
 communis—
 notes, (29) 243.
 spread from wild to cultivated plants, (26) 243.
 graminis—
 notes, (26) 646; (28) 149; (34) 644, 845; (36) 846; (38) 48.
 overwintering, (33) 647.
 studies, (33) 146, 847; (35) 651.
 susceptibility of wheat to, (29) 844.
 treatment, (28) 346.
 polygoni—
 notes, (28) 52; (29) 450, 650; (30) 351; (33) 545; (34) 52.
 treatment, (32) 545.
 sp. on tomato, (39) 651.
 spp., notes, (37) 453, 551, 657.
 tortilis, notes, (37) 550.
- Erythraeus**—
 arvensis, notes, (27) 561.
 sp., notes, (28) 755.
- Erythrapsides pygmaeus**, notes, (37) 255.
- Erythrina velutina**, disease of (35) 354.
- Erythrite**—
 as source of carbon for molds, (30) 226.
 determination, (26) 709.
 structure of, (28) 506.
- Erythrocytes**—
 nonnucleated, origin, (32) 377.
 of Australian vertebrates, (34) 577.
 of ox, pig, and sheep, (38) 481.
- Erythrodestrin**—
 in starch hydrolysis, (40) 460.
 salivary digestion, (36) 661.

- Erythroneura*—
 ador n.sp., description, (40) 261.
 comes, see Grape leafhopper.
- Erythrosin*, action of, (28) 880.
- Escanaba River*, water power projects on, (28) 415.
- Escutcheon*—
 relation to milk and butter production, (34) 670.
 relation to milk yield, (30) 171, 473.
 value in judging dairy cattle, (29) 775.
- Eskimos*, Alaskan, standard of living, (32) 358.
- Esparto*—
 grass dust, analyses, (28) 523.
 notes, (31) 832.
- Espersette*, culture experiments, (33) 33.
- Essence industry*, manual, (35) 717.
- Essences*, determination in liquors, (35) 717.
- Essential oils*, see Oils, essential.
- Essigella pini* n.sp., description, (40) 651.
- Esterase*—
 detection, (33) 713.
 distribution in animal body, (37) 308.
 of castor beans, (32) 803.
- Ester-hydrolyzing substances*, activity, (38) 803.
- Esters*—
 as affected by temperature, (28) 63.
 fatty acid, of glucose, (29) 269.
 hydrolytic action, (27) 802.
 occurrence in silage, (28) 608.
 unsaponifiable, absorption in the intestine, (29) 768.
 volatile, determination in citrus oils and extracts, (34) 410.
- Ether*—
 detection in ethyl alcohol, (29) 312.
 effect on—
 germination of seeds, (31) 335.
 germination of wheat, (27) 220.
 growth of *Endothia*, (35) 250.
 hemolytic reaction, (36) 878.
 inversion of saccharose, (33) 523.
 nitrification, (27) 131.
 permeability of plant tissues, (28) 732; (37) 326.
 plants, (27) 27, 131.
 plasma membranes, (26) 824.
 seed germination, (26) 131.
 soil micro-organisms, (31) 27.
 soils, (37) 519.
- extract—
 determination, (39) 313.
 of egg yolk, chemistry of, (26) 503.
 of feeding stuffs, (32) 709; (34) 13.
 of fodders, composition and digestibility, (27) 500.
 of hays and fodders, composition and digestibility, (28) 69, 108.
 forcing plants with, (28) 837.
 forcing strawberries with, (28) 145; (31) 238.
 sterilization of soils by, (32) 816.
 still, description, (36) 504.
- Ethereal oils*—
 in spruce wood, (29) 504.
 production from wood, (28) 50.
- Etherization*, effect on—
 enzymatic activity of bulbs and tubers, (30) 728.
 plant metabolism, (26) 127.
- Ethers*, fruit, character and uses, (30) 258.
- Ethyl*—
 acetate vapor, larvicidal value, (34) 359.
 alcohol—
 adulteration, detection, (29) 312.
 assimilation by yeasts and fungi, (28) 824.
 effect on soil microorganisms, (31) 27.
 effect on synthetic action of emulsion, (29) 505.
 insecticidal value, (39) 762.
 methods of analysis, (29) 312.
 occurrence in silage, (28) 608.
 wood waste as source of, (40) 17.
 butyrate as affected by glycin, (28) 409.
 nitrate, assimilation by plants, (26) 32.
 nitrite, determination in spirit of nitrous ether, (27) 614.
 phosphoric acid, hydrolysis by dilute acid and alkali, (31) 805.
- Ethylene*—
 detection, (29) 529.
 effect on plant metabolism, (34) 626.
 gas, detection in laboratory air, (30) 227.
 gas, detection with sweet pea seedlings, (29) 132.
- Ethylgalactosid*, sources, (38) 429.
- Etiella zinckenella schisticolor*, studies, (27) 552.
- Etrog*, culture in California, (40) 246.
- Eubacteriales*, nomenclature and classification, (39) 124.
- Eucactophagus*—
 graphipterus, notes, (34) 158.
 n.spp., descriptions, (40) 655.
- Eucallipterus flavus*, notes, (34) 453.
- Eucalymnatus tessellatus*, notes, (28) 854.
- Eucalyptol*—
 chlorination products, preparation, (38) 378.
 toxicity, (39) 586.
- Eucalypts*—
 and their products, (33) 646.
 botanical and chemical characters, (35) 841.
 culture and exploitation, (39) 351.
 culture in Dominica, (34) 438.
 growth on overflow land, (29) 338.
 in Coronado National Forest, (26) 51.
 manual, (30) 447.
 new species, descriptions, (26) 745.
 reforestation in the Tropics, (26) 141.
 tolerance for alkali, (26) 642.
 varieties, (27) 842; (29) 638.
 Western Australian, notes, (26) 745.
- Eucalyptus*—
 australiana n.sp., description, (36) 45.
 borer in South Africa, (39) 868.
 canker, studies, (39) 254.
 critical revision of genus, (39) 146.
 crown gall affecting, (28) 447.
 culture in northwest India, (28) 643.
 culture, treatise, (27) 442.
 descriptive notes, (36) 45.
 disease, description, (27) 253.
 frost resistance in California, (39) 146.
 globulus, *Hendersonia* disease of, (27) 548.
 globulus plantations of Nilgiris, (29) 443.
 industry in California, (28) 643.
 n.spp., descriptions, (34) 742.
 oil industry in Nilgiris, (38) 8.
 oil, larvicidal value, (34) 359.
 platypus, essential oil of (36) 710.
 posts, preservation, (29) 443.
 pulverulenta, leaf spot of, (29) 156.
 rudis, culture experiments, (34) 232.
 rudis, yields, (33) 49.
 strength and elasticity tests, (27) 43.
 variant forms, (38) 45.
 yield in California, (28) 239.
- Eucelatoria australis*, notes, (29) 357.
- Eucelaphis gillettei* n.sp., description, (34) 453.
- Eucerychysus scolyti* n.sp., description, (31) 355.
- Eucharidae* of Australia, (39) 154.
- Euchirinae* of British India, (40) 63.
- Euchlaena*—
 and *Tripsacum*, hybrid between, (36) 27, 28.
 mexicana, composition, (33) 162.
- Euclea* indeterminata, notes, (29) 855.
- Euclenia bassettella*, notes, (37) 255.
- Eucolla*—
 keilini, notes, (30) 758.
 rapae, notes, (33) 862.
- Eucommia ulmoides* as a source of rubber, (37) 417.
- Eucosma haracana*, life history, (33) 655.
- Eudamus*—
 proteus, see Bean leaf roller.
 tityrus, notes, (35) 356.
- Eudemis*—
 botrana—
 biology and control, (33) 555.
 control, (38) 257; (40) 167.
 notes, (28) 453; (36) 460.
 moth—
 biology and control, (26) 758, 860; (27) 758.
 destruction by heat, (28) 752; (34) 653.
 notes, (27) 56, 57; (28) 160; (34) 851.
 studies, (36) 355; (40) 167, 356.
 vacciniana—
 notes, (28) 854; (33) 352.
 remedies, (30) 154; (37) 56; (39) 60.
 studies, (26) 857; (31) 453; (36) 54; (40) 753.
- Euderomphale fuscipennis* n.g. and n.sp., description, (36) 557.
- Euderus columbianus*, notes, (36) 556.
- Eudiagogus rosenchoeldi*, notes, (34) 656.
- Eudialeurodicus bodkini* n.g. and n.sp., description, (35) 256.
- Eudorina* as affected by copper sulphate, (39) 27.

- Eutheola rugiceps*, life history and remedies, (38) 263.
- Eugenia*—
smithii, essential oil of, (36) 710.
uniflora, description and culture, (35) 144.
uniflora host plant of fruit fly, (26) 758.
- Eugenics*—
 and agriculture, (36) 92.
 and heredity, treatise, (28) 271.
 discussion, (27) 486.
 tables of statistical error, (26) 773.
- Eugenol*, preservative action, (26) 157.
- Euglobulin*, solution and precipitation, (31) 804.
- Eugonia californica*, bird enemies of, (26) 346.
- Eugufurm*, use against foot-and-mouth disease, (27) 379.
- Euhallidaya severinii* n.g. and n.sp., description, (32) 851.
- Eulachnus thunbergii* n.sp., description, (40) 651.
- Eulachon*, food value, (38) 468; (39) 570.
- Eulecanium*—
cerasi, remedies, (33) 653.
corni, notes, (29) 251; (38) 464.
nigrofasciatum, see *Terrapin* scale.
persicae, see *Peach* scale.
pruinorum, notes, (26) 149.
- Eulophidae*—
 of Australia, (39) 154.
 of North America, (39) 468.
- Eulophus*—
longulus, studies, (28) 560.
 sp., notes, (26) 151.
 sp., parasitic on alfalfa weevil, (31) 61.
- Eulyptus* spp., notes, (30) 357.
- Eumarschalia gennadii* n.subg. and n.sp., notes, (34) 360.
- Eumenes maxillosa*, notes, (27) 862.
- Eumerus strigatus*—
 in Canada, (37) 565.
 in New Jersey, (40) 654.
 notes, (28) 158; (30) 453; (31) 757.
- Eumeta junodi*, notes, (27) 456.
- Eumicrosoma benefica*—
 life history, (34) 363.
 n.g. and n.sp., description, (31) 355.
 studies, (31) 354.
- Eumomonycha pictipes* n.sp., description, (37) 58.
- Eumotus americanus* n.sp., description, (35) 262.
- Euonymus*—
 bud variation in, (37) 145.
japonicus—
 anthracnose disease, new, (39) 758.
 mildew affecting, (28) 241.
 respiration investigations, (34) 523.
Ordium, treatment, (27) 855.
 scale, notes, (31) 548.
- Eupachylomma rileyi*, parasitic on spring grain aphid, (32) 353.
- Eupachyrrhynchus*, n.g. and n.sp., description, (28) 561.
- Eupad*, preparation and use, (39) 80.
- Eupalus* sp., notes, (27) 861.
- Eupatorium urticaefolium*—
 relation to milk sickness, (37) 583; (39) 490.
 toxicity, (38) 685, 883; (40) 681.
- Eupelminus*—
coleopterophagus n.sp., description, (36) 259.
meteorii n.sp., description, (31) 355.
saltator, studies, (39) 265.
swezeyi n.sp., description, (34) 66.
- Eupelmis testaceiventris* n.sp., description, (28) 162.
- Eupelmus*—
allynii, studies, (35) 466.
cereanus, parasitic on bee moth, (26) 657.
- Eupeodes volucris*, parasitic on rose aphid, (31) 250.
- Euphagus cyanocephalus*, destruction of locusts by, (28) 351.
- Euphonia*, development of stomach in, (2) 265.
- Euphorbia*—
characias latex, lipases of, (31) 410.
cyparissias as affected by *Uromyces pisi*, (26) 650; (31) 347.
hemagglutinin content, (30) 503.
latex, chemical constitution, (29) 30.
lorifolia as a source of rubber and chicle, (28) 49.
 of Hawaii, (40) 261.
 spp., coagulation of latexes, (27) 44.
 spp., root systems, (37) 542.
 systematic position of genus, (29) 30.
tirucalli, monograph, (35) 842.
- Euphoria sepulchralis* on artichoke, (40) 58.
- Euphoriana uniformis* n.g. and n.sp., description, (31) 355.
- Euphorocera*—
claripennis—see also *Phorocera claripennis*.
 notes, (31) 752.
floridensis, notes, (36) 255.
- Euphyllura olivina*, notes, (30) 455.
- Eupithecia assimilata*, hymenopterous parasite of, (26) 657.
- Euplectrus*—
insuetus n.sp., description, (35) 262.
 n.spp., descriptions, (26) 63.
- Euplexoptera* of Connecticut, (26) 147.
- Euproctis*—
chrysorrhoea, see *Brown-tail* moth.
 sp. affecting tea, (34) 652.
- Eupterocalla opazoi* n.g. and n.sp., description, (37) 460.
- Eupteromalus*—
arvensis n.sp., description, (30) 661.
sarcophagae n.sp., description, (35) 262.
 sp. parasitic on locusts, (32) 60.
tachinae n.sp., description, (38) 165.
- Eupterygidae*, genera of, (40) 354.
- Euptoieta heyesia*, notes, (27) 559.
- Eurosta solidaginis*, notes, (35) 55.
- Euryachora*—
coffeicola, notes, (38) 51.
sacchari, notes, (37) 553.
- Eurycreon rantis*, notes, (28) 752.
- Eurydinota lividicorpus* n.sp., description, (38) 565.
- Eurygaster integriceps*—
 egg parasites of, (31) 256.
 studies, (31) 59.
- Euryum eurytheme*, studies, (32) 57.
- Eurytoma*—
amygdalis, biology and remedies, (32) 156.
ctenodactylomyia n.sp., description, (36) 556.
juniperinus n.sp., description, (34) 450.
 n.sp., description, (36) 557.
pissodis n.sp., description, (38) 565.
plurae n.sp., description, (30) 59.
pyrrhocerus n.sp., description, (29) 562.
 sp., description, (37) 59.
- Eurytomidae* of Australia, (39) 154.
- Eusattus muricatus*, notes, (35) 364.
- Euseces*—
batatae, notes, (28) 158; (30) 356; (33) 554, 563; (37) 256; (38) 864.
porcellus, notes, (40) 259.
- Eusol*—
 antiseptic value, (40) 182.
 preparation, (40) 414.
 preparation and use, (39) 80, 286.
- Eusophora osseatella* on potatoes, (39) 466.
- Eustrongylus flaria*, notes, (30) 381.
- Eustylomorphus squampunctatus* n.g. and n.sp., description, (32) 658.
- Eutane terminalis*, notes, (39) 557.
- Eutelaniae* in British Museum, catalogue, (28) 856.
- Eutelus*—
betulae n.sp., notes, (38) 565.
bruchophagi n.sp., description, (38) 165.
bruchophagi, studies, (40) 862.
 sp., notes, (26) 151.
- Eutermes*—
monoceros, notes, (31) 58.
morio, remedies, (36) 355.
- Eutettix*—
 n.spp., description, (34) 255.
tenella, see *Beet* leafhopper.
- Euthamia caroliniana*, volatile oil of, (36) 206.
- Euthrips*—
citri, see *Orange* thrips.
insularis, notes, (28) 250.
 n.spp., descriptions, (31) 549.
occidentalis, studies, (34) 450.
pyri, see *Pear* thrips.
tritici, see *Flower* thrips and *Frankliniella tritici*.
- Eutochia fullo*, notes, (29) 858.
- Eutrixoides jonesii* n.g. and n.sp., description, (28) 560.
- Eutypa*—
caulivora, notes, (34) 442.
crumpens, notes, (31) 746; (34) 841.
lutibunda coffeicola, notes, (38) 51.
- Eutypella prunastri*, notes, (26) 446.
- Euvalsa paulowniae* n.sp., description, (38) 648.

Euuanessa antiopa, notes, (28) 158; (29) 251.

Euxesta—

chavannei n.sp., description, (33) 860.

notata, larvae of, (36) 359.

notata, notes, (34) 360.

Euxoa—

excellens, notes, (38) 60.

ochrogaster, notes, (32) 448.

ochrogaster, poisoned bait for, (34) 358.

ridingsiana, notes, (29) 158; (36) 53.

segetum, see *Agrotis segetum*.

spp., notes, (27) 659.

Euzenillopsis diatraeae n.g. and n.sp., description, (36) 554.

Euzophora—

aeglaella, notes, (35) 656.

semifuneralis, studies, (33) 454.

Evania spp. on *Stylopyga orientalis*, (33) 750.

Evaporation—

and absorption, (38) 210.

and plant succession in southeastern Washing-

ton and adjacent Idaho, (32) 626.

and rainfall in eastern Pennsylvania, (32) 34.

and run-off, relation to precipitation, (40) 810.

apparatus, description, (40) 505.

as affected by—

forests, (29) 842.

shade, (26) 821.

volcanic haze, (29) 721.

at different levels above soil surfaces, (29) 615.

devices, description, (37) 409, 503.

effect on soil moisture, (28) 218.

formula, (37) 882; (38) 511.

from circular water surfaces, (38) 115, 223.

forest and cultivated soils, (37) 418.

irrigation reservoirs and canals, (34) 387.

lakes, (27) 817.

loam and sandy soils, (30) 21.

snow surfaces, (38) 209, 416.

soils, (29) 125, 615; (31) 25; (36) 421.

soils and plants, relation to weather, (28)

212.

the Nile at Khartum, (28) 27.

water surfaces, (26) 417, 614; (28) 219; (29)

225, 615; (30) 118, 713.

water surfaces and river beds, (37) 785.

in Egypt and Sudan, (27) 817.

marshes, (29) 615.

prairie and forest plants, (26) 821.

studies of insects, (31) 350.

the atmosphere, (31) 615.

Turgai-Ural Colonization District, (26) 620.

kinetic theory, (36) 719.

lunar periods, (38) 510.

measurement, (33) 320; (36) 226; (39) 810.

multiple effect, studies, (30) 890.

observations, (30) 317; (36) 719.

paper on, (31) 213.

relation to—

plant distribution, (28) 212; (29) 826.

plant succession, (32) 128; (37) 725; (39) 122.

soil bacteria, (27) 516.

wilting of plants, (27) 515.

stations, installation and operation, (34) 509.

studies, (28) 812; (38) 522.

studies, equipment for, (38) 115.

summer, studies, (26) 628.

Evaporator—

for frozen vegetables, description, (37) 806.

vacuum, heat transmission and entrainment in,

(28) 893.

Evaporimeter, description, (30) 118.

Evergreen—

bagworm, studies, (27) 557.

damping off and sun scorch, notes, (29) 547.

Evergreens—

as affected by soils, (29) 513.

culture, (36) 535.

culture on heath land, (35) 242.

dwarf, descriptions, (33) 242.

injury in winter of 1918, (40) 253.

leaf persistence, (37) 726.

of Colorado, (35) 147.

selection and care, (33) 242.

water conductivity, (40) 821.

winterkilling, (27) 542.

Evetria—

buollana—

in New Jersey, (34) 355.

notes, (33) 58; (34) 752; (36) 854; (40) 652.

Evetria—Continued.

buollana—continued.

occurrence on Long Island, (32) 251.

studies, (32) 654.

n.spp., descriptions, (33) 655.

resinella, notes, (34) 855.

Evolution—

address on, (31) 727.

and formation of species, notes, (39) 825.

bibliography, (27) 175; (28) 370.

biological principles, (29) 67.

by means of hybridization, treatise, (37) 432.

heterozygosis in, (27) 428; (29) 31.

in animals, (28) 466.

in plants, (27) 733.

mutation factor in, (34) 629.

mutation theory, (28) 768.

notes, (26) 346.

relation to heredity, (26) 161.

review of literature, (27) 368.

role of selection in, (39) 573.

studies, (26) 878.

treatise, (26) 365, 470, 528; (28) 876; (29) 665; (33)

552; (37) 573.

Ewes—see also Sheep.

breeding, rations for, (32) 669.

breeding, roughages for, (31) 367.

cull, for early market lambs, (32) 863.

feeding experiments, (33) 171; (39) 168, 372.

maintenance experiments, (36) 667.

milk, composition, (40) 775.

pastures for, (33) 171.

pregnant, wintering, (28) 573.

range, milk production, (39) 774.

Exanthema—

coital, in cattle, (31) 381.

vesicular, in horses and cattle, (26) 678.

Exartema permundanum, notes, (28) 156.

Excavating machinery, investigations, (34) 189.

Excelsior industry in United States, (30) 845.

Excitation in plants and animals, (34) 29.

Exechia spp., notes, (27) 57.

Exenterus diprioni n.sp., description, (34) 456.

Exercise—

effect on internal organs, (28) 272.

in education and medicine, treatise, (34) 261.

severe, in cold weather at high altitude, (32) 564.

Exoascus—

bullatus, notes, (37) 550.

cerasi, studies, (37) 250, 550.

deformans—

biology and treatment, (37) 250, 655.

notes, (27) 849; (36) 347, 750; (37) 550; (38) 50,

546, 550.

studies, (33) 347.

treatment, (27) 855; (28) 152; (30) 50, 353, 448;

(31) 749, 843; (32) 241, 842; (35) 458; (40) 749.

insitiae on plum, (39) 353.

pruni, notes, (36) 751; (40) 749, 845.

pruni, treatment, (36) 849.

spp., notes, (28) 747; (31) 540.

theobromae, notes, (29) 155.

Exobasidium—

aequale n.sp., notes, (37) 630.

azaleae, notes, (30) 448.

azaleae, treatment, (27) 855.

citri n.sp., description, (33) 454.

hesperidum n.sp., description, (38) 849.

oxycoeci, notes, (39) 56.

reticulatum n.sp., description, (29) 450.

s.p., notes, (28) 551; (29) 446; (30) 247.

unedonis n.sp., description, (37) 557.

vexans, notes, (31) 55, 56; (37) 252; (38) 354; (40)

48.

Exochomus—

constriatus, studies, (29) 355.

quadripustulatus, introduction into California,

(34) 361.

Exophthalmus spengleri, notes, (30) 355.

Exoprosopa n.sp., description, (36) 552.

Exorista—

arvicola, notes, (28) 558.

blepharipoda, biology, (39) 658.

caesar, n.sp., description, (34) 855.

pyste, notes, (28) 554; (30) 654; (31) 752; (36) 155.

spinipennis, notes, (37) 764.

spp., notes, (28) 755.

(*Tachina*) *robusta*, notes, (31) 752.

Exoristoides slosonae, notes, (37) 764.

- Exosmosis**—
from roots of anesthetized plants, (32) 626.
studies, (37) 128.
- Exosporium**—
durum n.sp., notes, (37) 148.
n.spp., descriptions, (37) 748.
pulchellum n.sp., notes, (37) 148.
ulmi n.sp., description, (27) 451.
- Experiment**—
farm—
at Akola, Berar, description, (35) 135.
at Ottawa, (32) 490.
potato, in Lancashire, (40) 500.
farms, county, (28) 40; (31) 98, 495.
field at Bromberg, report, (31) 732.
- station—
activities, value to Nation, (39) 101.
at Añas, (30) 599.
Cawnpore, report, (31) 732.
Coimbatore, report, (31) 733.
Guadeloupe, publications, (40) 700.
Harleshausen, report, (28) 736.
Hildesheim, report, (27) 815.
Hmawbi, report, (31) 736.
Ivoloina, Madagascar, (35) 835.
Koilpatti, report, (31) 733.
Königsberg, report, (28) 178.
Palur, report, (33) 130.
Partabgarh, report, (28) 736.
Tucumán, Argentina, report, (31) 628.
Yawnghwe, Burma, (34) 696.
- citrus, at Riverside, (40) 294.
forest biological, in New York, (40) 800.
horticultural, in Brazil, (39) 199.
in Philippines, (40) 499.
in Santo Domingo, (38) 99.
in Virgin Islands, (38) 608.
movement in United States, history, (27) 708.
new, at Guadeloupe, (39) 98.
news service, development, (28) 11.
of agricultural bacteriology in Italy, (39) 99.
projects, long-continued, (40) 703.
publications, distributions, (28) 8.
publications, editing, (31) 105.
publications, papers on, (28) 13.
Record, notes, (38) 500.
research as seen from within and without (33) 793.
- station work—
as a basis for agricultural extension and demonstration, (34) 104.
constructive ideals in, (32) 603.
coordination, (34) 2.
ethics of, (26) 4.
publication, (33) 401.
- station workers—
return from war service, (40) 401.
training, (36) 102.
war service opportunities, (38) 1.
- stations— *see also* Alabama, Arizona, etc.
administration, (37) 101.
administrative management, (29) 401.
advancing scientific character of work, (32) 13.
and agricultural colleges, relation (27) 490; (31) 196.
extension institutions relation, (36) 498.
extension work, relation, (31) 196; (32) 96; (38) 6.
laboratories in France, Superior Council, (40) 99.
the war, (36) 601.
U. S. Department of Agriculture, relations, (29) 604; (32) 194.
as affected by European war, (35) 605.
as field for research workers, (34) 701.
branch, discussion, (28) 12.
contributions to chemical journals, (36) 600.
control and regulatory work of, (33) 307.
decline in annual reports, (26) 401.
engineering, need of, (33) 308.
forest, administration, (31) 341.
forestry in, (26) 15.
functions of, (34) 699.
future work, influence of war on, (40) 403.
- Experiment**—Continued.
stations—continued.
in Austria, report, (26) 692; (29) 119.
Canada, (28) 695.
China, (36) 799.
Dutch East Indies, (35) 696.
France, (38) 406.
Norway, (30) 194; (32) 392.
the Southwest, progress of, (35) 1.
the Tropics and Subtropics, (28) 820.
United States, statistics, (29) 897.
insular, investigations at, (38) 601.
laws concerning, (32) 496; (35) 94; (36) 598; (38) 95.
organization and policy, (39) 705.
organization lists, (26) 795; (28) 691; (31) 599; (34) 94; (36) 794; (39) 497.
present position and outlook, (40) 1.
project plan of administration, (32) 13.
relation to reconstruction problems, (39) 702.
relation to secondary schools of agriculture, (28) 97.
relation to the State, (39) 298.
response to war conditions, (37) 1, 605.
retiring allowances for, (32) 195.
rural economics in, (32) 701.
salaries and distribution of service in, (32) 195.
statistics, (28) 691.
war emergency activities, (38) 4.
work and expenditures, (33) 299; (34) 493; (36) 794; (38) 898.
- Experimental**—
farms in Canada, (28) 695; (33) 93; (36) 296.
farms in Kentucky, (35) 122.
field in Josephsdorf, (29) 290.
Explorers, polar, food for, (32) 857.
Explosions in milling plants, (32) 790.
Explosives, use in—
agriculture, (26) 91; (29) 183, 785; (30) 589; (32) 85, 589, 884.
clearing land, (26) 591; (31) 288.
drainage, (27) 687.
gardening, (33) 684.
- Extension work**—*see also* Agricultural colleges and Agricultural extension.
in horticulture, (40) 833.
in pomology, (40) 834.
in United States, (40) 396.
- Extraction**—
apparatus—
description, (26) 511, 802.
drip protection, (40) 806.
modified Wiley, (27) 806.
notes, (29) 800.
treatment of corks, (38) 411.
by partially miscible solvents, (40) 611.
methods, studies, (33) 413.
processes, discontinuous, (37) 803.
- Extractives**, value in nutrition, (34) 258.
- Extractor** for plant material, description, (36) 413.
- Extracts**, analyses, (35) 663.
- Eye**—
disease, infectious, in cattle, (37) 691.
fly, life history and habits, (38) 359.
worms in chickens, notes, (29) 784.
- Eyes**, embryonic, origin of melanotic pigment in, (27) 468.
- Eysenhardtia**—
olivana n.sp., description, (35) 228.
polystachya, wood of, (33) 740
- Fabraea maculata**—
investigations, (33) 347.
treatment, (39) 548.
- Fabrics**—
cold storage, (27) 565.
conservation, (40) 595.
processed, for frost protection, (33) 48; (35) 537
- Factor**, meaning of term in genetic discussion, (37) 526.
- Fagaceae** of eastern North America, (33) 646.
- Fagara**—
integrifoliola, root cotton of, (27) 237.
xanthoxyloides, betains in, (27) 204.
- Fagopyrum**—
cause of, (31) 280.
in pigs, (38) 589.
- Fagopyrum tataricum**, notes, (30) 838.

- Fairs—
and their educational value, (39) 693.
community, (38) 392.
county school, in Virginia, (29) 599.
illustrative exhibits, (37) 297.
organization, (39) 693.
school, receptacles for exhibits, (40) 96.
- Fairy rings—
notes, (31) 247.
studies, (26) 446; (38) 222.
- Falco sparverius, notes, (27) 355.
- Fallowing—
effect on soil moisture, (26) 533; (29) 211, 425.
effect on soils, (26) 421.
experiments, (27) 638, 833; (28) 321; (29) 735; (30) 124, 731; (32) 525, 531; (40) 229.
summer, (32) 793.
- Families, poor—
diet of, (28) 662.
living conditions in London, (30) 166.
proper feeding, (26) 262.
- Family budgets—
importance of (30) 863.
in Chicago stockyards district, (32) 163.
of laborers in Holland, (32) 163.
- Fan weed, notes, (28) 46; (36) 442.
- Fannia—
canicularis—
hibernation, (34) 254.
notes, (30) 458.
studies, (37) 665.
pusio, notes, (38) 557.
scalaris, relation to myiasis of urinary passages, (32) 450.
spp., "critical" point for, (36) 256.
spp., notes, (27) 759.
spp., relation to myiasis, (30) 757.
- Farase, use against glanders, (30) 481.
- Farcy, *see* Glanders.
- Farina, determination of acid content, (33) 14.
- Farine, analyses, (40) 173.
- Farm—
account of South Dakota farmer, (40) 488.
accounting, (26) 896; (28) 594; (29) 293, 633, 690, 691; (30) 793; (31) 689; (32) 292, 494; (33) 92, 893; (39) 496, 844; (40) 192, 687.
accounting, textbook, (29) 792.
accounts, diary for, (36) 593.
adviser, county, (33) 697.
advisers—
in California, (30) 695.
in Missouri, (29) 899.
reports, (40) 789.
and forest, manual, (26) 391.
animals, *see* Animals, Livestock, Cattle, etc.
arithmetic, textbook, (30) 197.
arithmetic, type problems, (40) 493.
bookkeeping, notes, (28) 191.
boy, autobiography, (35) 696.
boys and girls, treatise, (26) 899.
boys, education for, (27) 595.
buildings—
concrete, construction, (32) 888.
construction, (30) 892; (35) 587.
drawings and photographs, (37) 699.
galvanized iron for, (28) 188; (31) 591.
handbook, (26) 686, 894; (27) 892; (28) 290, 487; (29) 186, 689.
heating systems for, (38) 492.
hollow clay blocks for, (36) 399.
lighting, (26) 398; (35) 391.
location, (36) 687.
paper on, (26) 398.
permanent, design, (32) 790.
permanent, economy of, (31) 688.
plans, (31) 291; (34) 487, 598, 892.
probable duration of, (31) 591.
reconstruction in France, (36) 891.
roofing for, (36) 590.
treatise, (31) 291, 591; (36) 891; (37) 90, 789.
ventilation, (32) 592.
- bureau—
at Binghamton, New York, (28) 492.
county, in California, (31) 690; (37) 888.
in New York, (26) 699; (29) 692; (32) 388.
- bureaus, work of, (31) 894.
- business—
analyzing, (33) 91.
arithmetic, (33) 899.
size of, (35) 692.
- Farm—Continued.
census in Nebraska, (40) 194.
census in New York, (37) 491.
colonies, bibliography, (32) 490.
contracts, types of, (35) 589.
conveniences, descriptions, (27) 90.
conveniences, notes, (31) 291, 388.
courses, winter, in maritime Canada, (28) 497.
demonstration—
editorial on, (29) 701.
in New Jersey, (29) 599.
work in Kentucky, (32) 197.
development bureau, report, (32) 793.
diary, (39) 486.
equipment—
calculating interest on, (34) 194.
care of, (29) 595.
determining average length of life, (28) 895.
for sheep raising, (37) 388.
in Minnesota, manual, (31) 93.
minor articles, (37) 491.
treatise, (37) 388.
forestry, notes, (28) 843.
granary, portable, (39) 494.
grounds, improvement, (37) 396.
handicraft for rural schools, (37) 699.
home grounds, syllabus of lecture on, (27) 299.
homes—*see also* Rural homes.
arrangement and adornment, (34) 836.
attractive, (40) 640.
in United States, ownership, (32) 193.
labor saving devices for, (26) 790; (28) 662; (39) 165.
management, (29) 465; (30) 395, 462.
plan, equipment, and management, (32) 891.
planning, (36) 400.
planning and adorning, (27) 146.
plumbing, (27) 389.
reading in, (27) 96.
relation to food supply and labor problems, (38) 694.
rules for cleaning, (28) 694.
sanitation in, (28) 789.
servant question in, (31) 490.
syllabus of lecture on, (26) 597.
treatise, (31) 591.
water supply for, (27) 317; (28) 188; (33) 779; (36) 390, 891; (38) 391.
water systems, (40) 91.
household accounts, (39) 594.
- houses—
construction, (33) 892.
cost, (36) 400.
fireproof, construction, (29) 689.
handbook, (28) 188.
heating, (36) 590.
hot water supply for, (31) 189.
lighting, (27) 388; (28) 395.
lighting by electricity, (27) 90.
lighting by gas, (27) 90.
planning, (29) 186; (31) 396.
implement shed, plans, (31) 489.
implement societies, cooperative, (39) 594.
- implements—
care and repair, (39) 292; (40) 889.
notes, (31) 185.
paper on, (26) 398.
power for, (26) 89.
in Unstrut valley, description, (31) 191.
income, factors affecting, (37) 491.
investments by inexperienced persons, (31) 787.
kitchen as a workshop, (32) 65.
kitchens, plumbing for, (36) 390.
labor, *see* Agricultural labor.
- land—
selection in Gulf coast region, (26) 120.
systems of renting, (26) 487.
value, (40) 792.
value in France, treatise, (40) 892.
value in New England, (27) 294.
- lands—
in New Jersey, (36) 689.
injury by erosion and floods, (37) 520.
leasing, (31) 192.
of Japan, redivision, (40) 892.
purchasing in New York, (38) 494.
redistribution in France, (37) 491.
terracing, (40) 188.
valuation, (28) 489.

Farm—Continued.

leases in Iowa, (34) 193, 792.

life—

education for, (30) 297.
in England, (30) 898.
reading course in, (29) 598.
schools in North Carolina, (32) 895.
value of engineering to, (35) 184.

Loan Act, Federal, *see* Federal Farm Loan Act.
loan associations, (35) 105; (36) 289.

loans, rate sheet for, (37) 91.

loans, short-term, (40) 389

loans, short-time, interest rates and other charges on, (35) 891.

machinery, *see* Agricultural machinery.

making in upper Wisconsin, (39) 396.

management, (26) 897; (27) 486, 673; (28) 13; (30) 197, 896; (31) 787; (32) 292, 389.

management—

and credit system, (39) 689.
and demonstration work, (27) 798.
Association, American, (39) 192, 702.
climatic factors, (39) 615.
courses in agricultural colleges, (38) 696.
for boll-weevil conditions, (35) 393.
graduate courses, (37) 794.
in black earth region of Russia, (31) 94.
Central Germany, (29) 170.
Chemung County, New York, (34) 791.
Chester County, Pennsylvania, (34) 592.
east Texas, (35) 794.
eastern Nebraska, (36) 391.
Gallatin Valley, (31) 689.
Kansas, (33) 694.
Knox County, Ohio, (37) 195.
Lenawee County, Michigan, (39) 689.
Minnesota, (39) 394.
Missouri, (37) 789.
New Zealand, (36) 493.
Silesia, (29) 89.
southern New York, (30) 193.
the South, testing efficiency, (40) 789.
Willamette Valley, (39) 795.

monograph, (28) 292.

of cotton farms in Texas, (39) 395.

outline and discussion, (27) 91.

papers on, (36) 298; (37) 389; (40) 298.

principles, (28) 594.

relation to rural economics, (26) 10.

research projects, (40) 890.

school in Austria, (26) 689.

studies, (29) 391; (40) 388.

studies, form for, (33) 91.

summer courses, (37) 794.

survey, (34) 393; (40) 388.

management survey—

data, correlation in, (37) 269.

data, use, (34) 895.

data, validity, (37) 389.

in Chautauqua Co., New York, (35) 296.

Georgia, (39) 293.

Indiana, Illinois and Iowa, (30) 490.

Johnson Co., Missouri, (32) 791.

Ontario, (39) 593.

South Carolina, (39) 294.

southeastern Ohio, (39) 893.

management—

teaching, (27) 95; (28) 198.

textbook, (31) 494; (33) 429.

treatise, (28) 789; (32) 393.

weakness in, (33) 490.

managers, training, (29) 92.

mechanics—

and drawing, high school course, (29) 192.

course in, (26) 393; (28) 91.

for agricultural high schools, (32) 597.

instruction in, (36) 496.

projects in, (40) 795.

school in Argentina, (34) 99.

shop, bench and tools for, (31) 792.

mortgage loans, (35) 693; (39) 796.

mortgage loans, amortization plan, (35) 589.

mortgages, (31) 192.

mortgages, handbook, (36) 688.

mortgages in United States, (28) 190.

motors, treatise, (31) 186.

Farm—Continued.

operations—

climatic control, (38) 414.

normal day's work, (30) 89.

operators, years of occupancy in United States, (31) 690.

organization—

in Arizona, (39) 294.

in Montana, (40) 488.

ownership, stages of advancement to, (40) 92, 687.

people, insanity among, (32) 791.

power, cost, (27) 790.

practice—

field studies, (28) 198.

in Arkansas Valley, Colorado, (28) 336.

studies v. field experiments, (30) 32.

textbook, (35) 93.

premises, disinfection, (36) 675.

prize competitions, (36) 93.

problems in United States, (30) 390.

products, *see* Agricultural products.

profits in New Jersey, (39) 293.

receipts, relation to live stock, (27) 669.

records and accounts, (32) 893.

records, value, (39) 496.

reservoirs, (38) 84.

sanitation, (33) 591, 784; (36) 687.

school at Feldsberg, Austria, notes, (27) 695.

school on Long Island, (29) 200.

schools and colleges in France, Germany, and

Belgium, (28) 793.

science, textbook, (40) 295.

shop work, textbook, (33) 792.

state, in Tasmania, (28) 598.

supplies, cooperative purchase, (35) 190.

supplies, purchasing, (28) 790; (32) 287.

survey in—

Montana, (40) 92.

Washington, Oregon, and Idaho, (38) 824.

Wisconsin, (37) 290.

surveying, notes, (32) 885.

tenancy, *see* Land tenancy and tenure.

wagons, descriptions and tests, (26) 789.

wastes, utilization for feeding, (38) 168.

women, needs of, (32) 890.

women, social life for, (31) 788.

women's institutes in America, (30) 495.

woodlots, notes, (28) 897.

work for discharged soldiers, (36) 392.

Farmer and agent, teamwork, (39) 496.

Farmers—

and city consumers, relationship, (31) 894.

and the new day, treatise, (40) 889.

as weather observers, (27) 413.

associations in Netherlands, (31) 691.

attitude toward science, (34) 401.

banks, cooperative, (29) 294.

bookkeeping for, (26) 595.

bulletins, subject index, (35) 299.

buying and selling agencies in New Jersey, (40)

592.

club house in Indiana, (31) 697.

clubs in Minnesota, (33) 697.

clubs, notes, (30) 496.

clubs, organization, (31) 98; (32) 287.

cooperation among, (26) 291.

cooperative—

associations, legal status, (30) 191.

buying organizations, (38) 190.

company in Indiana, (29) 294.

elevator in Nebraska, (26) 488.

elevators, accounting system for, (33) 192.

exchanges, formation and scope, (31) 389.

organizations in North Carolina, (30) 894.

purchasing and marketing organizations

(37) 888.

Day, guide, (26) 795.

demonstration work, (27) 599.

demurrage information for, (33) 91.

Educational and Cooperative Union in Texas,

(30) 591.

Educational and Cooperative Union of Amer-

ica, (28) 488.

elevator movement, (32) 593; (40) 592.

elevators in Minnesota, (34) 392.

English, labor exchanges for, (26) 190.

exchange in New Jersey, (27) 591.

Farmers—Continued.

- excursions, (37) 895.
 - German-American, status, (31) 294.
 - government aid to, (26) 291; (39) 192.
 - improving personal credit, (32) 892.
 - in United States, age of, (32) 390.
 - in United States, term of occupancy, (31) 690.
 - income of, (29) 689; (35) 692.
 - income tax, (40) 192.
 - institutes—
 - in Great Britain, government aid to, (28) 596.
 - Illinois, (29) 95.
 - Kansas, (30) 195.
 - Michigan, (26) 298, 299.
 - Minnesota, (32) 895.
 - New York, (28) 792.
 - Ontario, (28) 695; (30) 495; (34) 94.
 - Pennsylvania, (27) 899.
 - United States, (26) 598; (28) 695, 792; (29) 898; (31) 195; (33) 698, 792, 793; (36) 194, 795; (38) 899.
 - papers on, (32) 97; (37) 796; (40) 595.
 - province, (28) 95.
 - relation to organized extension agencies, (32) 14.
 - use in Smith-Lever funds for, (32) 14.
 - women's auxiliary clubs of, (32) 197.
 - insurance against accidents in Belgium, (31) 94.
 - interest paid by, (29) 186.
 - Jewish, cooperation among, (29) 894.
 - Jewish, in United States, (28) 689.
 - labor incomes, (36) 491, 492.
 - law book for, (26) 93.
 - list of books for, (29) 299.
 - list of references for, (35) 195.
 - living, part furnished by the farm, (32) 487.
 - meeting halfway, (37) 892.
 - Minnesota handbook for, (40) 193.
 - mutual fire insurance, (37) 391, 594.
 - National Congress of United States, (34) 596; (36) 288.
 - negro, foods for, (36) 562.
 - of United States, census statistics, (28) 190.
 - organization, (40) 193.
 - organizations in the past, (32) 691.
 - President's message to, (39) 693.
 - psychology of, (37) 491, 592.
 - ready reference book, (31) 196.
 - relation to bankers, (33) 490.
 - relation to railroads, (27) 591.
 - selling agencies, (29) 294, 894.
 - short course for, (27) 695.
 - Slavic, in the South, (32) 489.
 - small—
 - government aid to, (27) 591.
 - in Italy, (34) 391.
 - training at home, (32) 289.
 - state aid for, (27) 392.
 - state loans to, (28) 688; (29) 90, 691.
 - tenant, compensation for disturbance, (32) 286.
 - tenant, in Great Britain, condition, (26) 791.
 - traders, and agricultural organization, booklet, (28) 292.
 - Union, cooperative enterprises of, (26) 894.
 - union warehouse company in North Carolina, (32) 489.
 - "universal military service," (37) 290.
 - value of education to, (34) 393.
 - winter school for, (34) 494; (36) 396.
 - with agricultural education, incomes, (33) 494.
 - young, book for, (28) 387.
- Farming—see also Agriculture.**
- as a business, (34) 95.
 - association in North Dakota, (26) 598.
 - British, treatise, (33) 93.
 - business side, (28) 790.
 - cost, (27) 893.
 - costs, determination, (40) 192.
 - costs in Ohio, (40) 292.
 - dairy, see Dairy farming.
 - diversified, with tenants in Louisiana, (26) 487.
 - economic aspect, (27) 595.
 - evolution of, (40) 589.
 - factors of efficiency in, (30) 98, 493; (31) 388; (32) 89.
 - for disabled service men, (40) 790.
 - grain, in North Dakota, (40) 735.
 - handbook, (26) 298, 693.
 - improved, (28) 387.

Farming—Continued.

- in Alaska, (28) 488; (33) 694; (36) 494.
 - Arkansas, (40) 133.
 - blue grass region, (36) 789; (38) 693.
 - Brooke County, W. Va. (35) 90.
 - Canada, (34) 490.
 - Chester Co., Pennsylvania, (39) 621.
 - China, Korea, and Japan, treatise, (26) 290.
 - Colorado, (39) 90; (40) 428.
 - eastern Nebraska, (36) 391.
 - eastern Oregon, (32) 131.
 - England treatise, (38) 192, 689.
 - Forsyth Co., North Carolina, (39) 689.
 - Gallatin Valley, Montana, (37) 290.
 - Gulf Coast region, (40) 133.
 - Kentucky and Tennessee, (40) 133.
 - lower Rio Grande irrigated district of Texas, (39) 395.
 - Minnesota, (36) 790.
 - Missouri, (36) 93.
 - New Brunswick, (40) 690.
 - New Jersey, (31) 390; (36) 893; (39) 746; (40) 19.
 - New Mexico, relation to climate, (40) 18.
 - North Carolina, (35) 589; (37) 190.
 - Philippine schools, (33) 799.
 - sand hills section of Nebraska, (35) 827.
 - Saskatchewan, (26) 733.
 - southeastern Ohio, (36) 396.
 - southern mountains, (39) 893.
 - southwestern Kentucky, (39) 893.
 - Sumter Co., Georgia, (36) 893.
 - Tennessee, (38) 91.
 - time of war, (36) 290.
 - United Kingdom in time of war, (34) 89.
 - Utah, (38) 493; (40) 388.
 - Wayne County, Ohio, (37) 132.
 - Willamette Valley, (34) 490.
 - influence of a city on, (39) 495.
 - intensive—
 - handbook, (30) 141.
 - in cotton belt, (28) 533.
 - in India, (39) 834.
 - in India, treatise, (32) 131.
 - method, books on, (40) 589, 590.
 - livestock v. grain system, (39) 531.
 - manual, (29) 293; (34) 635, 796.
 - near Monett, Missouri, (38) 894.
 - notes, (33) 91.
 - on cut over lands of Michigan, Wisconsin, and Minnesota, (36) 190.
 - on muck lands, (36) 191.
 - plans for 1919 in Texas, (40) 789.
 - plantation, in United States, (37) 390.
 - profitable, factors in, (35) 191; (36) 190.
 - profitable, notes, (38) 483.
 - relation of Government to, (35) 89.
 - relation to meteorology, (29) 314.
 - safe, (34) 688.
 - specially adapted lines, (40) 891.
 - system for the corn belt, (32) 192.
 - systems, (34) 90.
 - systems in central New Jersey, (26) 387.
 - systems, production efficiency, (34) 298.
 - tenant, in Yazoo-Mississippi Delta, (34) 593.
 - textbook, (26) 691; (28) 393; (36) 897; (38) 297; (40) 95.
 - tractor, in Idaho, (40) 90.
 - tractor, in Indiana, (40) 788.
 - tractor in the East, (40) 89.
 - treatise, (30) 193; (31) 787; (32) 291, 429; (35) 696; (37) 290; (39) 89.
 - types of, in relation to climate, (40) 116.
 - under boll-weevil conditions, (36) 593.
 - village communities in, (29) 789.
 - war-time, in England, (40) 790.
 - weather factor in, (35) 617.
 - with green manures, treatise, (26) 817.
 - without manure in Baltic provinces, (26) 522.
- Farms—**
- and farm lands of California, (40) 194.
 - beautifying, (31) 48.
 - blacksmithing for, (27) 484.
 - business methods for, (26) 299.
 - business side of, (26) 594.
 - cold storage on, (29) 88.
 - collective, in Italy, (40) 389, 893.
 - concrete on, (30) 487.
 - cost accounting on, (27) 794; (29) 690; (32) 791; (36) 191.
 - cost of fencing, (34) 485.

Farms—Continued.

cotton, producing home supplies on, (40) 292.
 county demonstration, in Nebraska, (29) 633.
 crop exhibits for (29) 93.
 demonstration in—
 Canada, (34) 490.
 Italy, (26) 496.
 Mississippi and Louisiana, (26) 496.
 disinfection on, (29) 77.
 diversified in Texas, (38) 89.
 electric lights for, (27) 485, 589; (36) 400, 590.
 electricity for, (26) 91; (27) 292, 790; (29) 184;
 (30) 88, 89, 388, 493, 891; (32) 885; (34) 87.
 experimental, in Canada, (28) 695.
 financing, (27) 690.
 for sale—
 in Connecticut, (33) 390; (34) 289; (35) 589.
 Maine, (38) 91.
 Massachusetts, (26) 290.
 Pennsylvania, (33) 191; (35) 589.
 West Virginia, (33) 490.
 or rent in New York, (33) 490; (35) 589; (37) 390.
 general, cows on, (40) 574.
 heat, light, and power for, (28) 487.
 in Delaware County, New York, (33) 694.
 in England and Wales, (33) 789.
 New Hampshire, (37) 790.
 New Hampshire, list and descriptions, (38) 192.
 United States, census statistics, (27) 294; (28) 189.
 United States, distance from market, (33) 192.
 Vermont, (36) 290.
 Wisconsin, comparison, (28) 690.
 irrigated—
 operation, (38) 391.
 profits from, (31) 689; (38) 493.
 selecting, (38) 186.
 large v. small in Ontario, (26) 791.
 lighting plans for, (31) 185.
 live stock capacity, (36) 474.
 mechanical power for, (30) 789.
 methods of organizing, (38) 191.
 movement to, from cities and towns, (33) 294.
 natural history, (31) 195.
 natural history, treatise, (32) 493.
 of agricultural institutions in Austria, (27) 695, 797.
 of New Zealand, city boys on, (26) 593.
 organizing for profit, (26) 388.
 penal, bibliography, (32) 490.
 planning, (27) 146; (34) 789.
 power for, (27) 484, 891.
 prairie, buildings for, (35) 689, 690.
 productivity, (37) 290.
 profitable and unprofitable in New Hampshire, (29) 391.
 purchasing by renters, (27) 294.
 reinforced concrete for, (27) 589.
 reorganization, (31) 388.
 sandy-land, in Indiana and Michigan, (35) 392.
 school—
 care and management, (34) 394.
 in New York City, (31) 297.
 laying out and planting, (32) 692.
 management, (33) 195.
 use of, (35) 795.
 score card for, (26) 297.
 selection, (26) 897.
 sewage disposal on, (33) 892; (34) 88; (38) 188.
 share-leasing contracts, (39) 295.
 size of in Texas, (34) 488.
 small—
 buildings for, (31) 786.
 developing in Georgia, (29) 594.
 management, (39) 795.
 tools on, (26) 299.
 social centers on, (26) 488.
 staircase, of ancient Peru, (35) 794.
 State institution, in New Jersey, (39) 89; (40) 592.
 sugar beet, management in Austria-Hungary, (31) 689.
 tenure in United States, (28) 190.
 term of occupancy in United States, (31) 690.
 unprofitable acres on, (35) 192.
 use of dynamite on, (27) 292, 689; (28) 185.
 use of lumber on, (40) 90.

Farms—Continued.

use of tractors on, (32) 886.
 value of food, fuel, and use of house, (36) 289.
 waste land on, (35) 692.
 waste on, (29) 595.
 water power for, (26) 790; (34) 84, 185, 286, 586.
 water supply for, (28) 214, 717; (29) 696, 722; (30) 89, 294; (32) 281, 487; (33) 289; (36) 86, 188, 687; (38) 188.
 windmill power for, (27) 790.
 Farragut high school, Concord, Tenn., notes, (31) 597.
 Farrer research scholarship in New South Wales, (26) 498.
 Fasciation in plants, notes, (32) 426.
 Fasciola—
 hepatica—
 biology, (31) 758.
 development, (28) 885.
 distribution in Canada, (36) 86.
 notes, (35) 877.
 magna, new host for, (36) 86.
 spp., notes, (27) 182.
 Fasciolopsis buski, occurrence in pigs in Tonkin, (27) 181.
 Fasting—
 effect on—
 glycogen content of liver, (30) 867.
 growth, (29) 869.
 hydrogen ion concentration of feces, (30) 866.
 leucocyte content of blood, (30) 866.
 utilization of proteins, (29) 268.
 nitrogen elimination in, (37) 167.
 nitrogen exchange in, (30) 260.
 prolonged, studies, (33) 566.
 purin metabolism in, (30) 261.
 studies, (26) 360; (27) 465; (29) 664; (30) 764, 765; (32) 460; (34) 863.
 Fat—see also Oils.
 absorption—
 by mucosa of mammalian stomach, (31) 465.
 experiments with dogs, (27) 272.
 in the intestine, (29) 768; (33) 166.
 in typhoid fever, (35) 369.
 studies, (35) 166; (39) 671.
 acetyl number, determination, (31) 713.
 analyses, (26) 113; (30) 712.
 and casein, determination in milk, (31) 674.
 and fatty acid derivatives in the diet, (38) 570.
 and lipase of animal tissues, correlation, (30) 204.
 animal—
 and plant, differentiation, (34) 13.
 digestibility, (34) 364; (36) 860.
 effect of free fatty acids on, (34) 312.
 purin content, (40) 205.
 as affected by tubercle bacilli, (27) 783.
 as source of muscular energy, (28) 462.
 as substitute for carbohydrates for infants, (34) 462.
 as supplements to protein-free milk food, (30) 562.
 body, pigments of, (31) 274.
 changes in during absorption, (30) 864.
 changes in during cooking, (32) 354.
 chemical technology of, (29) 413.
 chemistry, (26) 113; (29) 108; (31) 201.
 chicken and turkey, constants, (27) 111.
 cleavage in the animal body, (31) 465.
 composition of human milk, (27) 506.
 conservation and dietetic values, (39) 472.
 constants, physical and chemical, (36) 502.
 constituents, action of symbiotes on, (40) 464.
 content of—
 blood, notes, (28) 67.
 buttermilk, variation in, (28) 277.
 cream, (26) 599.
 cooking, use in South America, (33) 362.
 crude, factors affecting acidity, (31) 758.
 crude, of beets, (28) 201.
 decomposition, (28) 372; (30) 310.
 deposition in testes of fowls, (28) 470.
 detection of benzoic acid in, (28) 208.
 determination, (28) 863; (29) 309; (33) 314, 711; (34) 505; (39) 311, 313.
 determination—
 Duclaux method, (37) 207, 414.
 in animal substances, (28) 805.

Fat—Continued.

determination—continued.

- in avocados, (36) 139.
- bread, (30) 205.
- butter, (27) 614, 812; (30) 113; (32) 508.
- buttermilk, (26) 410; (28) 114.
- cacao, (30) 13.
- cacao products, (36) 807.
- cheese, (26) 276; (27) 312, 811; (28) 612; (29) 311; (30) 207, 208; (31) 613, 811; (32) 414; (33) 208, 314; (34) 206; (37) 416.
- cheese, cream, and butter, (32) 313.
- chocolate, (27) 498.
- cocoa, (40) 206.
- copra products, (26) 611.
- cream, (27) 811; (33) 16, 314; (34) 714; (35) 111.
- cream and cream products, (29) 798.
- dairy products, (27) 499; (30) 208.
- dried milk, (28) 113; (30) 314; (33) 314, 505; (37) 508.
- evaporated milk, (28) 412; (31) 115.
- evaporated milk and milk powder, (29) 507; (38) 314.
- feces, (33) 415; (40) 207.
- feeding stuffs, (26) 507, 713; (27) 716, 812; (28) 715; (29) 800; (30) 813.
- foods, (35) 12.
- ice cream, (31) 210, 211; (34) 113.
- ice cream and condensed milk, (33) 16.
- milk, (27) 497, 715, 809, 811; (28) 412, 808; (31) 209, 612, 873; (32) 299, 312; (33) 503; (34) 506; (36) 507.
- milk and cream, (32) 576; (34) 713; (37) 618.
- milk and milk products, (26) 712; (30) 810; (32) 298.
- milk and other fluids, (34) 206.
- milk products, (29) 311, 507; (37) 507, 805.
- milk, tables for, (32) 270.
- powders, (35) 716.
- seeds, (27) 812.
- of glycerol content, (28) 313.
- Polenske number, (27) 507.
- small amounts, (31) 610.
- specific gravity, (27) 497.
- unsaponifiable matter in, (33) 17, 506, 711; (37) 805.
- Reichert-Meißl and Polenske numbers, (31) 811.
- development in black walnuts, (30) 411.
- diet, excessive, notes, (28) 663.
- digestibility, (26) 263.
- digestion—
 - and absorption, (34) 257.
 - and absorption in animals, (33) 566.
 - in infants, (29) 365; (40) 661.
 - of, (26) 565.
- diminution in cheese during ripening, (31) 475.
- distribution in steers, (26) 366.
- edible—
 - chemistry of, (35) 9.
 - examination, (27) 207.
 - in United States, (38) 265.
 - methods of analysis, (26) 113.
 - nutritive value, (37) 165.
 - treatise, (26) 258.
- effect on—
 - blood sugar in phlorizin diabetes, (35) 863.
 - concrete, (29) 184.
 - digestibility of milk, (33) 663.
 - nitrogen excretion during starvation, (33) 663.
 - nutrition and growth, (33) 262, 462, 465.
 - pancreatic secretion, (29) 465.
 - protein metabolism, (26) 765; (34) 762, 763.
- examination, (31) 509.
- extraction from sheep's milk cheese, (33) 505.
- extraction, new apparatus for, (34) 313.
- extractor, description, (34) 804.
- feeding, effect on metabolism of pigs, (30) 268.
- food, effect on body fat, (30) 110.
- foreign, detection in butter, etc., (39) 715, 805.
- formation in—
 - cork, (31) 312.
 - oleaginous fruits, (26) 801; (29) 201.
 - Phillyrea media, (31) 312.
- from petroleum, (38) 714.
- from various sources, feeding value, (31) 864; (33) 368.

Fat—Continued.

function of, in nutrition, (29) 868.

- globules—
 - casings of, (29) 806.
 - in milk, studies, (29) 579.
- glycerids of, (32) 801.
- hardened, as food for man, (32) 660; (33) 362, 564.
- hardening by hydrogenation, (28) 762.
- heat of bromination, (34) 803.
- hydrocarbon, treatise, (30) 313.
- hydrogenation, (35) 9.
- hydrolysis, (27) 804.
- hydrolysis by lipase, (27) 803.
- in cookery, (38) 366.
- cows' milk at time of calving, (28) 194.
- grain sorghums, (38) 410.
- mixed rations, digestibility, (32) 69, 70.
- pork, melting points, (39) 175.
- Rhus laurina and R. diversiloba, (38) 202; (39) 27.
- the diet, relation to intestinal flora, (40) 867.
- the diet, varying amounts, (27) 666.
- ingestion, effect on metabolism, (28) 866.
- ingestion, influences of, (33) 869.
- injections, effect on fat metabolism, (28) 462.
- intestinal absorption, (32) 563.
- intoxication in animals, (33) 69.
- investigations, (30) 110.
- isodynamic substitution for carbohydrates, (40) 563.
- laboratory handbook, (29) 811.
- loss in butter making, (28) 277.
- loss in drying meat, (28) 164; (30) 205.
- medicinal, oxidation numbers, (39) 109.
- medicinal, therapeutic action, (28) 262.
- melting point, determination, (36) 15.
- melting point, relation to digestibility, (26) 159.
- metabolism, (27) 464; (39) 874.
- metabolism—
 - factors, affecting, (26) 471.
 - hepatic functions in, (31) 69.
 - pathology, (27) 665.
 - relation to blood fat, (34) 563.
 - studies, (28) 66.
- methods of analysis, (26) 202; (27) 205; (30) 314; (31) 509, 806; (32) 314; (33) 258, 804; (35) 205; (38) 206, 804; (40) 311.
- natural and hardened, unsaponifiable constituents, (33) 711.
- natural, effect on growth, (33) 262.
- new constant for, (32) 808.
- nonemulsified, passage from stomach, (30) 464.
- occurrence and distribution in wood, (35) 225.
- preservatives, detection, (31) 508.
- production, dual purpose and total, (28) 570.
- production, inheritance in cows, (32) 369.
- rancid—
 - biochemical reaction, (36) 109.
 - detection, (39) 313.
 - evaluation, (37) 114.
 - reactions, (40) 412.
- rate of leaving the stomach, (32) 858.
- resorption, (26) 159.
- rôle in—
 - glycogen formation, (31) 763.
 - immune processes, (40) 380, 676.
 - infant feeding, (35) 165.
 - utilization of food albumin, (28) 262.
 - utilization of proteins, (40) 464, 562.
- sampling, (38) 206, 804.
- saponification, (27) 497.
- significance in the diet, (40) 170.
- solid, substitute for, (30) 669.
- soluble A—
 - distribution in plants, (36) 61.
 - formation in animal body, (36) 62.
 - separation from milk fat, (37) 308.
- solvents, effect on sewage-sick soils, (28) 623.
- sparing value, (27) 768.
- specific, in complement fixation, (39) 80.
- splitting by bacteria, (26) 370.
- stained, behavior in animal organism, (27) 670.
- stains, transmission to offspring, (29) 177.
- stored, utilization for growth, (40) 567.
- sulphuric acid or Maumené number, (37) 805.
- supply of France, (35) 859.
- synthesis of, (26) 307; (27) 108.
- technology and analysis, treatise, (34) 507.
- tests, (26) 202.

- Fat**—Continued.
 use in the home, (36) 462.
 utilization as affected by water drinking, (30) 766.
 utilization in the animal body, (29) 368.
 variation in corn cockle seeds, (28) 525.
vegetable—
 bromin absorption by, (29) 612.
 detection in animal fats, (33) 612, 712.
 digestibility, (36) 860.
 effect on growth, (33) 465.
 isolation, (29) 459.
 of India, (29) 413.
- Fatigue**—
 effect on amino acid content of blood serum, (30) 466.
 measurement, (28) 570.
 physical and mental, effect on blood pressure, (32) 664.
 poisons of, (32) 79.
 products, status of knowledge, (39) 572.
 relation to carbon dioxide output, (30) 867.
 studies, (30) 465; (31) 167; (32) 360.
- Fatty acids**—
 chemical constitution, (32) 762.
 cleavage in the animal body, (31) 465, 561.
 determination, (26) 410; (27) 497; (29) 309; (31) 508; (36) 673; (40) 804.
 formation in oleaginous fruits, (26) 801.
 free, effect on flash and fire points of animal fats and oils, (34) 312.
 free, in fats, (26) 411.
 from petroleum, (38) 714.
 from varnish oils, (39) 613.
 hemolysis, (26) 156.
 in butter, (29) 508.
 butter and other fats, (37) 508.
 corn silage, (28) 109.
 cotton-seed foots, (28) 615, 616.
 eggs, (30) 675.
 feeding stuffs, (32) 709.
 food, passage into milk, (34) 472.
 grain sorghums, (38) 410.
 milk, (27) 113.
 milk fat, (31) 175; (38) 12; (39) 15.
 normal animals, (33) 69.
 phosphatids, (31) 608.
 silage, (28) 608.
 insoluble, purification, (26) 23.
 liquid and solid, separation, (26) 23.
 nephelometric values, (39) 311.
 preparation for titer test, (27) 497.
 separation of ammonium salts from (26) 112.
 unsaturated, biological significance, (35) 381.
 utilization for feeding, (39) 271.
 variations during inanition and feeding experiments, (34) 258.
 volatile—
 determination in feces, (26) 202.
 in corn silage, (28) 109.
- Fatty**—
 oils, refractive indexes, (27) 614.
 substances in oat kernels, notes, (26) 502.
- Fauna**—
 extinct, of Crete, (27) 371.
 fresh water, notes, (28) 28.
 of America, treatise and bibliography, (27) 855.
 British India, (37) 54, 765; (40) 63.
 German colonies, (29) 653; (30) 851.
 Great Salt Lake, (39) 759.
 Hawaii, treatise, (29) 250.
 New England, (40) 260.
 Wyoming, (38) 255.
- Faunal zones of Canada**, (30) 52.
- Faunas of natural regions of the globe**, treatise, (31) 846.
- Favus**—
 in poultry, studies, (40) 483.
 relation to Australian wheat, (40) 583.
- Feathers**—
 analyses and fertilizing value, (32) 722.
 bird, utilization in France, (26) 876.
 development, (27) 770.
 formation and characteristics, (31) 369.
 melanin pigment of, (38) 171.
 of fantail pigeons, heredity in, (40) 275.
 silky and woolly formations in fowls, (28) 577.
- Fecal nitrogen**, origin, (26) 663.
- Feces**—
 analyses before and after freezing, (33) 805.
 as affected by diet, (40) 477.
 bacteria in, (26) 161; (32) 165, 175.
 bacteria in, as affected by fasting and water drinking, (30) 765.
 chemical examination, (26) 161.
 chemistry of, (29) 568.
 determining coprosterol in, (40) 15.
 examination, (39) 286.
 fat content, determination, (40) 207.
 fermenting power, (31) 413.
 hydrogen ion concentration, (27) 465; (36) 365.
 hydrogen ion concentration of, during fasting, (30) 866.
 of male bovines, apparatus for collection, (29) 408.
 of tuberculous cattle, examination, (27) 481.
 phosphorus content, determination, (39) 806.
- Fecundity**—
 in fowls, inheritance, (28) 576, 577.
 in fowls, measurement, (33) 76.
 relation to age, (28) 767.
- Federal**—
 activities, erroneous impressions, (40) 778.
 Board for Vocational Education, (37) 198; (38) 596.
 Commission on Vocational Education, (30) 398.
- Farm Loan**—
 Act, (36) 289, 493; (37) 291, 492.
 Act, benefits of, (36) 894.
 Act, treatise, (39) 89.
 Board, (35) 104.
 Bureau, organization and purpose, (38) 191, system, (39) 796.
 farm loans, (40) 595.
 Food Control Act, (37) 399.
 Food Production Act, (37) 301.
 vocational education law, (37) 597.
- Federation**—
 for rural progress, (34) 699.
 of Women's Institutes of Canada, (40) 700.
- Feed**—
 cakes—
 analyses, (30) 712.
 from millet, (32) 117.
 vegetable, microscopic analysis, (26) 209.
 grinding and sifting mill, description and test, (30) 292.
 mills, tests, (31) 891.
 rack, description, (38) 593.
 residues, physical changes during digestion, (39) 476.
 trough for poultry, (30) 175.
 unit system for dairy cows, (28) 74.
 Feeders, automatic, for pigs, (29) 671.
- Feeding**—
 cake and corn, manurial value, (40) 824.
 effect on morphological and physiological condition of the animal body, (32) 365.
 estimating values in, (39) 271.
 experiments—*see also* Cows, Pigs, etc.
 British, digest of data, (33) 664.
 British, in 1911-12, (31) 266.
 interpretation of results, (26) 767; (30) 369.
 methods, (27) 469.
 planning and reporting, (28) 98.
 probable error in, (29) 169, 170; (33) 871.
 requirements of, (30) 103.
 standardization, (32) 99.
 with rations from restricted sources, (39) 71.
 floors, concrete, construction, (27) 89.
 flour, analyses, (39) 270.
 measuring rules for, (39) 834.
 notes, (31) 663.
 of cattle, (31) 77; (32) 173; (33) 275.
 cattle, treatise, (32) 258.
 farm animals, (31) 494; (32) 68; (37) 471; (40) 71.
 farm animals, textbook, (36) 597.
 farm animals, treatise, (28) 465, 898; (30) 67; (31) 468, 563; (36) 666; (37) 94, 172, 767, 795; (38) 268.
 men in logging camps, (32) 459; (33) 365.
 poorer classes, treatise, (33) 166.
 operations, Kellner's starch values in, (31) 663.
 principles of, (26) 767.
 problems, discussions, (29) 170, 665.
 rectal, (39) 670.
 standards, (39) 167.

Feeding—Continued.

standards—

- agreement in, (34) 670.
- discrepancies in, (34) 379.
- for milk production, (30) 774; (35) 800.
- for young cattle, (34) 372.
- formulas in place of, (33) 870.
- harmonizing, (32) 99.
- notes, (36) 374.
- starch equivalent theory, (32) 166.
- studies, (28) 877.

Feeding stuffs—*see also specific kinds.*

- acidity, (32) 259; (35) 770.
- adulterated, detection, (29) 311; (32) 300.
- adulteration, (30) 466.
- amino acid in, (33) 665; (36) 268.
- analyses, *see also* Feeding stuffs, inspection and analyses.
- analyses, (26) 26, 72, 266, 362, 363, 568, 665, 767, 873; (27) 68, 171, 371, 413, 469, 669, 718, 767, 775, 815; (28) 315, 364, 669, 811; (29) 119, 270, 271, 367, 467, 570, 665; (30) 268, 371, 466, 467, 565, 671, 712, 868; (31) 73, 168, 366, 467, 564, 663, 863, 864; (32) 169, 465, 568, 578, 661, 665, 862; (33) 71, 170, 568, 665, 759, 870; (34) 72, 371, 664, 767; (35) 368, 471, 867; (36) 63, 65; (38) 369, 411, 572, 666; (39) 171, 269, 270; (40) 72.
- and feeding, treatise, (34) 261, 565; (37) 767.
- Armsby's table, (40) 875.
- as affected by—

- European war, (35) 891.
- fermentation in silos, (26) 360.
- soils and climate, (28) 364.

as source of bacterial infection of milk, (32) 472.

- ash analyses, (29) 861.
- bacteriological examination, (36) 666.
- bacterial flora of, (32) 75.
- British, notes, (30) 466.
- buying, (38) 470.
- by-product, analyses and digestibility, (29) 366.
- by-products, utilization, (28) 74.
- calcium and phosphorus in, (30) 867.
- calculating values, (39) 271.
- classification, (30) 169.
- commercial, comparative values, (39) 70.
- comparison, (29) 170.
- compensation for under tenancy, (29) 420.
- composition, (28) 672, 770; (31) 673; (39) 167.
- composition and digestibility (26) 73, 666; (32) 862.

condimental—

- analyses, (26) 568; (27) 670; (28) 464.
- examination and valuation, (28) 616.
- law in Illinois, (29) 61.
- purchase and use, (36) 667.
- state control, (27) 670.
- containing fats, methods of analysis, (32) 312.
- cooking for pigs, (37) 866.
- cost in Philippines, (26) 362.
- cost of digestible nutrients in, (38) 767; (39) 167, 168.
- damaged, relation to disease in animals, (32) 200.
- definitions, (28) 762; (29) 367; (31) 73, 467; (33) 71; (39) 167.
- determination of nitrogenous constituents, (40) 510.
- determination of quality, (37) 208.
- digestibility, (26) 774; (28) 362, 464; (31) 766, 862; (33) 758; (37) 168, 672, 865; (39) 167.
- digestibility in mixtures, (37) 65, 677.
- direct transfer of in ruminants, (29) 66.
- drying, handbooks, (27) 669.
- effect of quantity on digestion, (32) 96.
- effect on—

- butter, (31) 77, 375.
- butter flavor, (32) 270; (38) 683.
- cheese quality, (29) 173.
- color of egg yolks, (31) 473.
- color of milk fat, (31) 273.
- composition of manure, (27) 420; (30) 125.
- composition of milk, (26) 273, 879; (27) 677; (29) 776; (33) 174.
- eggs, (38) 577.
- fertility in live stock, (29) 170.
- fetal development, (32) 366; (33) 266.
- lard, (32) 21.
- milk, (28) 175, 674; (30) 178, 475, 573, 574, 875.
- milk and butter, (34) 570.
- milk fat, (31) 673.
- milk fat globules, (29) 579; (34) 570.

Feeding stuffs—Continued.

effect on—continued.

- milk production, (27) 176.
- urine excretion of sheep, (28) 874.
- wool, (32) 770.
- energy value, (27) 176; (28) 169; (33) 72; (36) 367, 374, 469.
- ether-soluble constituents of, (32) 709; (34) 13.
- examination and valuation, (28) 715.
- fermenting power, (31) 413.
- fertilizing—

- constituents, (39) 168.
- ingredients, (26) 73.
- value, (29) 769.

for dry weather, (33) 98.

- formation of hydrocyanic acid in, (28) 377.
- grain and cake, residual manurial value, (39) 530.
- Hawaiian, (39) 167.
- in northern Europe, (31) 864.
- Indian, composition, (40) 366.
- industry in United States, (30) 466.
- inorganic constituents, importance, (32) 465.
- inspection, (28) 364.
- inspection and analyses, *see also* Feeding stuffs, analyses.
- inspection and analyses, (26) 165, 362, 467, 568, 665, 768; (27) 170, 469, 774, 872; (28) 265, 364, 464, 465, 571, 669; (29) 270, 367, 769; (30) 67, 68, 169, 868; (31) 73, 467, 663; (32) 169, 259, 667; (33) 71, 371; (34) 168, 169, 263, 371, 665; (35) 373, 374, 562, 867; (36) 167, 268, 667, 765; (37) 268, 471, 767; (38) 367, 368, 369, 470, 665, 772; (39) 70, 167, 270, 370, 773; (40) 72, 470, 571, 665.
- inspection in—

- Alabama, (30) 371; (33) 71.
- Belgium, (27) 14.
- Florida, (26) 767, 873; (29) 567; (31) 366; (33) 164; (34) 707; (36) 467, 864.
- Georgia, (26) 665; (34) 566.
- Germany, (28) 736.
- Iowa, (36) 762.
- Louisiana, (33) 870.
- Maine, (34) 371; (36) 467, 563.
- Maryland, (26) 568; (27) 570; (28) 769; (34) 566; (39) 269.
- Massachusetts, (34) 467.
- Michigan, (35) 368; (38) 368.
- New Hampshire, (31) 366.
- North Carolina, (26) 568; (31) 366; (34) 263; (38) 572.
- North Dakota, (28) 762.
- Ohio, (34) 371, 566.
- Oklahoma, (28) 465.
- Pennsylvania, (27) 570, 670; (30) 868; (32) 568; (34) 72; (38) 369; (39) 270.
- South Carolina, (28) 265.
- South Dakota, (28) 661; (33) 67; (35) 471.
- Switzerland, (30) 618; (37) 311.
- Tennessee, (27) 469; (31) 366.
- Texas, (34) 467.
- Vermont, (36) 563.
- Virginia, (28) 669; (29) 766; (30) 74, 258, 268; (32) 661.

international movement, (33) 664.

judging, (29) 367.

law in—

- Alabama, (30) 372; (33) 71.
- England, (37) 215.
- Florida, (29) 869; (33) 164.
- Georgia, (31) 73.
- Indiana, (28) 464; (30) 169; (32) 169; (39) 71, 167; (40) 72.
- Kansas, (27) 171; (29) 666; (32) 169; (34) 169; (39) 370.
- Massachusetts, (28) 265, 465.
- New Hampshire, (26) 362; (29) 769; (31) 366; (32) 169.
- New Jersey, (28) 364; (29) 665; (37) 767.
- New York State, (28) 364; (30) 68.
- North Carolina, (31) 366.
- Ohio, (31) 73.
- Oklahoma, (28) 465.
- Oregon, (35) 471.
- South Dakota, (29) 567.
- Tennessee, (31) 366.
- Texas, (33) 371; (34) 467; (36) 765; (38) 369; (40) 572.
- Wisconsin, (31) 467.

Feeding stuffs—Continued.

- laws, (28) 74; (29) 266.
- laws in Great Britain and Ireland, (28) 459.
- laws in United States, (33) 170.
- leguminous, analyses (29) 569.
- list of manufacturers, (27) 170.
- low grade, discussion, (29) 769.
- manurial residues, (36) 120.
- manurial values, (31) 221; (40) 126.
- medicinal, inspection, (34) 169.
- methods of analysis, (27) 205, 498, 609; (28) 208; (29) 311; (31) 806; (39) 611.
- microscopic identification, (27) 872.
- mineral constituents, digestibility, (40) 769.
- mineral content in relation to weather, (33) 870.
- mixed, adulteration, (26) 165.
- mixed, analyses, (26) 165, 266, 363, 468, 568, 665, 714, 768, 809; (27) 68, 170, 171, 469, 570, 670; (28) 265, 364, 464; (29) 467, 570.
- mixing, (31) 77.
- movement through alimentary tract, (26) 469.
- mycology of, (26) 355.
- new, (40) 72.
- nitrogen-free extracts in, (32) 21.
- nitrogen-protein table for, (33) 711.
- nonprotein nitrogen in, (36) 205.
- notes, (26) 768; (29) 876.
- nutritive value, (26) 767; (29) 170; (33) 170.
- nutritive value as affected by ensiling, (30) 371.
- nutritive value, comparison, (36) 666.
- of animal origin, for herbivorous animals, (26) 567.
- of minor importance, (38) 168.
- patent, description, (33) 170.
- pentosans of, (34) 168.
- phytin phosphorus of, (40) 772.
- precalculating costs, (36) 271.
- primer, (28) 265.
- Productive values, (32) 368; (35) 561; (37) 865.
- Proprietary—
 - analyses, (26) 72, 362, 568, 768, 873; (27) 68, 371, 469, 570, 670, 774, 775, 872; (28) 364, 465, 572, 669, 769; (29) 271, 367; (30) 377, 671.
 - digestibility, (28) 363, 464.
 - rate of passage through steers, (37) 673.
 - registered, (29) 367.
 - registration, (31) 73.
 - relation to animal diseases, (29) 66.
 - review of literature, (26) 266.
 - separation of organic phosphorus compounds, (27) 615.
 - silica of, estimation, (40) 610.
 - southern, for fattening calves, (39) 169.
 - spoiled, fertilizing value, (39) 430.
- starch—
 - content, (31) 809.
 - equivalent theory, (33) 870.
 - equivalents, (26) 467.
 - sugar-containing, energy value, (32) 767.
 - sugar-containing, notes, (34) 565.
 - Texan, egg-producing values, (39) 176.
 - therms, starch values, and feed units, (28) 74.
 - treatise, (26) 164.
 - utilization by fat cattle, (38) 469.
 - utilization by zebras, (29) 69.
 - valuation, (26) 363; (28) 265; (31) 71, 371, 864; (32) 368, 665; (34) 379, 670; (35) 372; (38) 66, 367, 368.
- war, notes, (36) 367.
- warm v. cold, (31) 367.
- waste, utilization, (35) 669.
- water-soluble nitrogen of, (34) 72, 501.
- weed seeds in, (40) 637.

Feeding—

- suggestions on, (39) 271.
- summary of investigations, (38) 572.
- use of desert plants, (40) 276.
- use of substitutes in, (39) 880.
- utilization of wild vegetation for, (40) 665.
- vitamin factor in, (40) 577.

Feeds, *see* Feeding stuffs.

Fehling's—

- solution, composition, (27) 714.
- sugar test, colloid chemistry of, (39) 14.

Feijoa—

- analyses, (40) 763.
- sellowiana—
 - disease, studies, (39) 549.

Feijoa—Continued.

- sellowiana—continued.
 - notes, (27) 242; (30) 839.
 - pollination experiments, (31) 837.
- Feldspar—
 - as source of potash, (27) 724; (29) 215, 518; (31) 621; (32) 126, 324; (34) 27, 328; (35) 326; (36) 728; (37) 427; (38) 123; (39) 218, 219; (40) 134.
 - as source of silica, and alumina, (27) 724; (29) 518.
 - deposits in Georgia, (34) 828.
 - electrically-treated, fertilizing value, (35) 726.
 - extraction of potash from, (26) 726.
 - fertilizing value, (38) 218; (39) 116; (40) 134, 515.
 - ground, fertilizing value, (34) 328; (37) 522.
 - production in 1913, (31) 321.
 - use in fixation of atmospheric nitrogen, (29) 518.
 - utilization, (28) 222.
- Fellonic acid, notes, (31) 312.
- Felt waste, fertilizing value, (33) 125.
- Feltia—
 - (*Agrotis*) exclamatoris, biology, (32) 59.
 - duceus, notes, (27) 659.
 - spp. in Louisiana, (40) 58.
- Fence—
 - dog-proof, description, (32) 866.
 - posts, concrete—
 - construction, (28) 290; (34) 487, 685.
 - machines for, (30) 487.
 - mold for, (32) 788.
 - posts—
 - durability, (37) 298.
 - fungi attacking, (38) 645.
 - preservation, (27) 148; (28) 147, 344, 441; (29) 443; (31) 241; (33) 242, 544; (34) 153, 743; (35) 843; (36) 244; (38) 248, 643, 644, 645.
 - tamarack for, (40) 744.
- Fences—
 - and fencing in New South Wales, (33) 589.
 - construction, (34) 487; (37) 886.
 - construction, handbook, (38) 291.
 - probable duration of, (31) 591.
 - wicker, construction, (35) 88.
 - wire, as affected by smoke, (33) 428.
 - wire, deterioration, (27) 793.
- Fencing, cost data, (34) 485.
- Fennel—
 - floral anomalies in, (29) 629.
 - presence in flour, (38) 712.
- Fenugreek—
 - as green manure, (40) 24.
 - nodule bacteria of, (32) 33.
 - seed, deodorizing, (32) 660.
 - seed, germination energy of, (29) 538.
 - use in bread making, (40) 66.
- Ferment—
 - action, reversibility, (30) 311.
 - action, studies, (32) 678; (34) 674; (35) 486.
 - Bulgarian, effect on monobasic acid, (26) 203.
 - new glucolytic, of yeast, (28) 710.
- Fermentation—
 - alcoholic—
 - as affected by colloids, (30) 431.
 - as affected by enzymes, (27) 426.
 - in seeds, (27) 220.
 - monograph, (29) 714; (34) 318.
 - studies, (38) 317.
 - and putrefaction, studies, (26) 308.
 - as affected by fluorin, (32) 308.
 - as affected by X-rays, (27) 231.
 - bacterial, in cereals, (29) 269.
 - bacteriology of, (28) 563.
 - bibliography, (26) 613.
 - chemistry, progress in 1911, (29) 107.
 - cytological researches, (36) 802.
 - effect on protein formation, (31) 223.
 - gases, methods of analysis, (30) 505.
 - gassy, in Emmental cheese, (31) 477.
 - in baking, (33) 66; (36) 464.
 - human intestines, (30) 262.
 - silos, effect on feeding stuffs, (26) 360.
 - wineries, (34) 207.
- industry, chemistry of, (33) 806.
- mixtures, preparation, (36) 509.
- notes, (26) 358.
- of bread, studies, (29) 864.
- organisms, culture, (30) 712.
- processes in breweries, distilleries, and yeast factories, treatise, (29) 509.
- products, effect on plant respiration, (26) 627.
- products, microbiology of, (26) 372.

Fermentation—Continued.

- products, use in animal feeding, (29) 665.
 - progress in 1907 and 1908, (27) 15.
 - relation to respiration in plants, (28) 328.
 - review of investigations, (30) 11.
 - theories of, (33) 824.
 - treatise, (27) 204.
 - viscous, studies, (38) 317.
- Ferments—see also Enzymes.**
- and their action, treatise, (30) 610.
 - as affected by—
 - hydrogen peroxid, (28) 112.
 - temperature, (26) 308.
 - various substances, (26) 309.
 - X-rays, (27) 225.
 - carbohydrate, of pancreatic juice, (34) 257.
 - chemistry of, (28) 201.
 - determination, (29) 408.
 - digestive, adaptation to diet, (34) 662.
 - digestive, assay of, (27) 108.
 - duodenal, activity of, (29) 268.
 - factors affecting activity and stability, (31) 203.
 - in invertebrates, (33) 311.
 - in sterile milk, (28) 411.
 - in tuberculous caseous material, (32) 274.
 - nomenclature (31) 409.
 - oxidation, of plants, (33) 409.
 - pancreatic, (29) 662.
 - protective—
 - diagnostic value, (31) 876.
 - formation, (34) 578.
 - of the animal organism, (30) 77.
 - studies, (33) 279, 385; (34) 578, 579.
 - proteoclastic, formation, (35) 179, 382.
 - proteolytic—
 - as affected by phosphates, (27) 108.
 - coagulation of milk by, (28) 112.
 - in blood during starvation, (32) 178.
 - method of study, (26) 107.
 - vegetable, in latexes, (31) 409.
 - reducing, studies, (26) 310.
 - reduction, notes, (26) 507.
 - relation to —
 - aroma in tea, (26) 309.
 - digestion and other life processes, (34) 563.
 - food decomposition in cold storage, (30) 659.
 - respiratory, in plants, (27) 828.
 - role of electrolytes in, (27) 712.
 - saccharification of starch by, (28) 609.
 - selected, in cheese making, (33) 277.
 - sensitiveness of complement toward, (26) 175.
 - specific, for typhoid-coli group, (34) 278.
 - standardized, therapeutic value, (33) 477.
 - textbook, (30) 311.
- Fern—**
- Boston, variation in, (36) 434.
 - caterpillar, *see* Callopietria floridensis.
 - land, conversion into grass, (37) 142.
 - leaf blight nematode, (36) 52.
 - poisoning in horses, (38) 788.
 - prothallia, (35) 431.
 - prothallia, nutrition and development of sexual organs in, (34) 824.
 - rusts, hosts of, (29) 645.
 - scale, notes, (27) 455; (28) 854; (36) 252.
 - tree trunks, analyses, (29) 270.
- Fern-asparagus root borer, notes, (28) 854.**
- Ferns—**
- certificated by Royal Horticultural Society, (31) 340.
 - culture, (39) 449.
 - eradication, (33) 836.
 - Nephrolepis, breeding, (35) 345.
 - of Vermont, (33) 330.
- Ferrets—**
- parasites of, (31) 586.
 - treatise, (37) 769.
- Ferric—see also Iron.**
- chlorid, examination, (30) 666.
 - chlorid hydrolyzed with fibrin, products, (39) 204.
 - hydrate, effect on nitrification in soils, (28) 217.
 - phosphate, fertilizing value, (26) 622; (28) 815; (36) 626.
 - sulphate—
 - action on plants, (39) 630.
 - fertilizing value, (40) 440.
 - hydrolysis and oxidation in soil, (39) 522.

Ferrous—

- iron content of volcanic ash, (40) 812.
 - phosphate, fertilizing value, (36) 626.
 - sulphate—
 - antiseptic and germicidal value, (37) 176.
 - effect on ammonification, (28) 724.
 - effect on germination of seeds, (29) 828.
 - effect on potatoes, (30) 735.
 - effect on soil acidity, (37) 23.
 - fertilizing value, (27) 628; (28) 820; (30) 326.
 - in sulphur-phosphate compost, (39) 624, 822.
- Fertilime— analyses, (38) 626.**
- Fertility—**
- in the rat, relation to age, (40) 468.
 - relation to color and sex in guinea pigs, (30) 472.
- Fertilization—**
- effect on soils, (30) 219.
 - effect on surface area of soils, (32) 318.
 - mechanism of, (28) 668.
 - theory of, (29) 167.
- Fertilizer—**
- chemistry, progress in, (26) 724.
 - composts, Philippine, from plant materials, (39) 523.
 - constituents in tobacco products, analyses, (26) 715.
 - constituents, loss in drainage water, (27) 519.
 - experiments, *see also special crops.*
 - experiments, (30) 125; (32) 321, 819; (38) 19, 120, 624, 825; (39) 327, 737, 799, 812; (40) 229, 321, 422, 515, 724.
 - experiments—
 - at Aas Agricultural College, (30) 333.
 - Central Agricultural Experiment Station of Stockholm, (31) 123.
 - Pée Dee substation, (38) 816.
 - Stavropol Caucasian station, (37) 521.
 - cooperative, in East Prussia, (31) 821.
 - cooperative, in Holland, (31) 820.
 - directions for, (31) 28, 218.
 - discrepancy in results, (27) 519.
 - environmental factors in, (32) 321.
 - error in, (28) 221.
 - factors affecting results, (32) 216.
 - field v. laboratory, (32) 515.
 - in Assam, (37) 427.
 - German colonies, (31) 622.
 - northern England, (33) 326.
 - Prussia, (29) 426.
 - Rhode Island, (38) 325.
 - Switzerland, (34) 22.
 - the Northwest, (29) 821.
 - West Prussia, (30) 427.
 - interpretation, (31) 28, 319, 320.
 - lime-requirement factor in, (32) 623.
 - methods of conducting, (27) 519; (36) 121.
 - notes, (29) 213.
 - on DeKalb soil, (40) 723.
 - moor soils, (40) 230.
 - muck, "shot clay," and other soils, (33) 33.
 - peaty meadows in Hungary, (30) 220.
 - systematic scheme for, (34) 218.
 - triangle system, (37) 799; (40) 126.
 - value, (35) 121.
- factories, construction. (27) 327.**
- formulas, (31) 628.**
- formulas, tables for. (31) 323.**
- from dogfish, (32) 424, 722.
 - from fish wastes, (32) 519.
 - from kelp, (33) 424.
- industry—**
- in Austria-Hungary, (33) 821.
 - Belgium, Netherlands, Norway, and Sweden, (30) 127.
 - Great Britain, (40) 816.
 - Southern States, (32) 219.
 - United States, (26) 819; (30) 628, 791; (32) 424; (36) 817.
 - United States, future of, (29) 821.
 - progress in 1909-1911, (27) 629.
 - role of chemistry in, (33) 425.
- law in—**
- Alabama, (27) 521; (32) 725.
 - Delaware, (38) 124.
 - England, (37) 215.
 - Georgia, (26) 127, 624.
 - Maryland, (27) 727.
 - Massachusetts, (26) 727; (27) 327; (40) 517.
 - Michigan, (30) 428.

Fertilizer—Continued.

- law in—continued.
 - Missouri, (29) 626.
 - Netherlands, (27) 725.
 - New Jersey, (28) 326, 726.
 - Ohio, (26) 127; (27) 128.
 - Pennsylvania, (27) 727; (34) 625.
 - Porto Rico, (33) 821.
 - Tennessee, (27) 219; (33) 126; (35) 328.
 - Texas, (26) 35; (28) 34.
 - Washington, (28) 727.
 - West Virginia, (33) 220.
 - laws—
 - in Great Britain and Ireland, (28) 459.
 - in United States, (31) 323.
 - report, (27) 806.
 - materials—
 - definitions, (29) 517.
 - in United States, (29) 517.
 - microscopic identification, (31) 517.
 - mixtures for crops, (26) 622.
 - mixtures tests, (26) 632.
 - new mineral, tests, (29) 129.
 - plant, municipal, at Los Angeles, California, (33) 625.
 - plants, bacteriology of, (34) 127.
 - problem, discussion, (37) 815.
 - raw materials, imports into United States, (26) 524.
 - requirements—
 - in England, France, and Italy, (40) 422.
 - in Great Britain, (40) 24.
 - in Norway, (40) 127.
 - of crops, (28) 722.
 - resources of United States, (27) 22.
 - salts—
 - action, (37) 624.
 - effect on plants, (28) 739.
 - toxicity toward plants, (35) 221.
 - situation in—
 - Egypt, (39) 724.
 - Germany, (34) 327.
 - Great Britain, (34) 621; (39) 120 522, 616.
 - Rhodesia, (40) 621.
 - South Africa, (39) 724; (40) 127.
 - United States, (35) 121; (39) 120, 327.
 - supply of—
 - France, (39) 424.
 - south India, (32) 424.
 - United States for 1919, (40) 421.
 - works of Paris, odors from, (27) 21.
- Fertilizers—see also specific material.**
- absorption by soils, (31) 723.
 - absorption by trees, (26) 443.
 - action, (27) 500; (28) 33.
 - action as affected by—
 - barnyard manure, (26) 522.
 - irrigation (26) 522.
 - organic compounds, (26) 224.
 - adaptation to crops and soils, (29) 821.
 - after effect, (29) 729.
 - analyses, *see also* Fertilizers, inspection and analyses.
 - analyses, (26) 26, 35, 127, 225, 325, 429, 624, 727, 809, 819; (27) 128, 219, 327, 413, 423, 521, 629, 718, 727, 815; (28) 294, 315, 325, 523, 627, 811, 820; (29) 119, 320, 521, 522, 626, 729; (30) 428, 697, 712, 720; (31) 31, 323, 624, 727, 823; (32) 32, 169, 219, 325, 424, 621, 725; (33) 126, 723, 821; (34) 332, 426, 625, 727; (35) 328, 430, 631, 728; (36) 124, 521, 628, 711, 822; (37) 24, 114, 127, 219, 220, 429, 630, 818; (38) 411, 425, 626; (40) 415.
 - analyses, statement of results, (26) 523.
 - analysis, vegetation test as a basis for, (33) 711.
 - and manures, handbook, (28) 538.
 - and manures, textbook, (30) 24.
 - and soil fertility, treatise, (28) 423.
 - application, (31) 38, 328; (33) 122; (34) 327; (37) 222, 521; (38) 619, 624; (39) 520.
 - application through leaves of plants, (30) 128.
 - as affected by—
 - European war, (35) 891.
 - soil moisture, (32) 814.
 - water supply, (32) 813.
 - as nutrient for soil bacteria, (34) 327.
 - availability, (36) 818.
 - availability of insoluble nitrogen in, (35) 426.
 - availability of nitrogen in, (27) 723; (28) 724.
 - bibliography, (34) 426.

Fertilizers—Continued.

- catalytic—
 - notes, (26) 225; (27) 628, 824; (31) 320.
 - review of investigations, (28) 223.
 - review of literature, (30) 821.
 - tests, (30) 627; (31) 31; (35) 523.
 - use, (27) 327; (34) 623.
 - use with lime nitrogen, (35) 519.
- chemical, treatise, (40) 421.
- chemistry of, (33) 219.
- commercial, insoluble nitrogen in, (40) 134.
- composition, (30) 327.
- composition and use, (27) 727.
- conservation, (36) 723.
- cost and returns, (40) 724.
- cost and use in 1916, (35) 21.
- decomposition by bacteria, (28) 221.
- destruction of weeds by, (26) 333.
- direct nutrition of plants by, (30) 124.
- drilling v. broadcasting, (31) 123; (33) 517.
- effect of long-continued use, (28) 123, 624.
- effect on—
 - action of soil organic compounds, (34) 126.
 - apples, (29) 438; (37) 41.
 - asparagus roots, (28) 236; (30) 142.
 - beets, (29) 332.
 - carinations, (36) 445.
 - catalytic power of soils, (28) 118.
 - coherence of soils, (31) 123.
 - cold resistance of almonds, (30) 238.
 - color of apples, (26) 817.
- effect on composition of—
 - asparagus, (27) 500; (36) 839.
 - beets, (28) 124; (31) 736.
 - cereals, (37) 827.
 - currant juice, (29) 838.
 - grasses, (32) 665.
 - hay crop, (27) 35.
 - mangold leaves, (28) 129.
 - meadow hay, (31) 622; (34) 620.
 - medicinal plants, (34) 18.
 - oranges, (37) 649.
 - rice, (29) 231.
 - soy beans, (34) 632.
 - tobacco ash, (37) 541.
 - wheat, (28) 140, 535; (32) 252; (37) 38; (38) 438, 518.
- effect on—
 - crop growth, (34) 517.
 - crop production in Germany, (30) 220.
 - crop yields, (30) 135.
 - decomposition of organic matter, (40) 214.
 - development of cotton, (34) 337.
 - drainage water, (26) 619.
 - fish, (29) 821.
 - fruits, (28) 144.
 - germination of seeds, (29) 327.
 - ginning output of cotton, (26) 635.
 - grapes, (31) 339.
 - hydrogen-ion concentration in soils, (39) 424.
 - keeping quality of cranberries, (30) 143; (31) 741.
 - keeping quality of pears, (27) 644; (29) 640.
 - lime requirements of soils, (37) 125.
 - maturity of cotton, (31) 39.
 - nitrification in soils, (35) 321; (36) 118.
 - nitrogen content of soils, (36) 218.
 - oats, (29) 151.
 - oil content seeds, (32) 428.
 - oranges, (36) 642.
 - pear blight, (34) 647.
 - plant food in soils, (29) 623.
 - plant growth, (29) 329.
 - potato scab, (32) 750.
 - production of cereals, (32) 827.
 - protein content of soy beans, (34) 140.
 - quality of sugar beets, (28) 44.
 - quality of tobacco, (38) 37, 139, 140, 239.
 - quality of wheat, (35) 832.
 - resistance of grain to hail, (30) 519.
 - ripening of pears, (31) 534.
 - root development, (26) 327; (29) 328; (30) 136.
 - rust production, (28) 148.
 - set of fruit in peaches, (29) 40.
 - soil acidity, (29) 237; (35) 22, 727; (37) 23.
 - soil aldehydes, (36) 424.
 - soil fertility, (34) 517.
 - soil moisture, (33) 217.
 - soils, (27) 124; (28) 520; (32) 31, 721; (33) 122; (35) 216, 516.

Fertilizers—Continued.

effect on solubility of—

- inorganic soil constituents, (37) 422.
- manganese in soils, (35) 424.
- plant food in soils, (35) 629.

effect on—

- starch content of potatoes, (33) 731.
- strawberries, (31) 534.
- the eye, (31) 29.
- tobacco, (33) 732.
- tomatoes, (29) 339.
- toxicity of organic compounds, (27) 520.
- variation in corn and beans, (29) 435.
- weed growth in meadows, (38) 141.
- weight of cotton seed, (26) 635.
- weight of oats, (31) 136.
- yield of rubber, (31) 444.

efficiency in dry years, (30) 626.

export from India, (33) 327.

factors affecting availability, (28) 420.

feldspathic, as sources of potash, (29) 796.

fermented, composition, (28) 124.

field tests, (27) 500; (28) 33.

for carnations, (27) 844.

forest trees, (35) 347.

fruit trees at planting time, (33) 237.

grasslands, application, (40) 626.

hay and pastures, (29) 517.

hops, (29) 534.

Illinois farms, sources, (39) 524.

Missouri soils, (33) 212, 213, 214, 215.

moor lands, (29) 516.

truck crops, treatise, (29) 837.

vegetables, (37) 320.

Wayne County, Ohio, farms, (36) 893.

freight rates on, (34) 392.

from city refuse, (27) 521.

industrial wastes, (39) 429.

loggerhead sponge and fish, (31) 622.

minor sources, (39) 430.

municipal waste, (31) 219.

the ocean, (26) 324.

handbook, (26) 725; (27) 128, 327; (29) 193, 517;

(31) 323; (34) 29; (36) 124; (37) 724; (39) 724.

home mixed v. factory mixed, (30) 25.

home mixing, (27) 328; (28) 723; (29) 521; (32)

325, 725; (34) 426.

home mixing and use, (30) 821.

importance of, (31) 215.

importation into Uruguay, (33) 626.

imports and consumption in United States,

(38) 817.

imports into New Zealand, (29) 729.

in Germany, (32) 722.

inefficiency of in dry regions, (31) 421.

inorganic, for sugar beets, (27) 500.

inspection and analyses, *see also* Fertilizers,

analyses.

- inspection and analyses, (26) 324, 522, 524, 624, 727, 819; (27) 128, 219, 327, 423, 521; (28) 34, 126, 325, 326, 425, 523, 626, 627, 726; (29) 420, 731, 823; (30) 28, 128, 327, 428, 520, 823; (31) 31, 126, 323, 727; (32) 219, 519, 520, 624, 725, 822; (33) 27, 126, 520, 724; (34) 133, 134, 332, 426, 520, 521, 624, 625, 726, 822; (35) 127, 128, 221, 328, 430, 728; (36) 125, 326, 327, 429, 520, 521, 627, 628, 728, 729, 822; (37) 127, 219, 324, 428, 524, 724; (38) 124, 328, 425, 521, 626; (39) 25, 121, 222, 329, 430, 730, 823; (40) 26, 424, 517, 622, 726.

inspection in—

- Alabama, (26) 624; (27) 521; (29) 521; (32) 725; (37) 219.
- Belgium, (27) 14.
- California, (38) 425; (40) 222.
- Canada, (26) 429; (28) 523; (34) 625.
- Florida, (26) 127, 624; (27) 629, 727; (29) 320; (30) 428; (32) 219, 725; (35) 430, 728; (36) 467, 822, 864.
- Georgia, (26) 624.
- Germany, (28) 736.
- Indiana, (29) 626.
- Louisiana, (34) 332.
- Maine, (36) 467.
- Maryland, (26) 819; (27) 727; (28) 820; (29) 522; (31) 727; (34) 426; (37) 24, 127; (38) 425.
- Mississippi, (27) 727.
- New Jersey, (28) 820; (37) 219, 429; (39) 330.
- North Carolina, (27) 219, 423; (28) 627; (29) 320, 522; (31) 126, 323, 624; (33) 821; (34) 426, 727; (37) 220, 630.

Fertilizers—Continued.

inspection in—Continued.

- Ohio, (26) 127; (27) 128; (29) 522; (30) 720; (32) 325; (34) 727; (35) 728; (36) 124, 521; (37) 429.

- Pennsylvania, (26) 727; (27) 128, 727; (31) 31; (32) 325; (34) 625; (35) 631; (36) 628; (37) 220, 818.

- Porto Rico, (33) 821; (34) 521.

- Saxony, (32) 689.

- Switzerland, (30) 618; (37) 311.

- Tennessee, (27) 219; (33) 126; (35) 328.

- Virginia, (33) 821.

- Wisconsin, (27) 128.

- international movement, (33) 626; (34) 426; (39) 823, 824.

- international trade, (37) 523.

- lessons on, (31) 394.

- licensed, (31) 467.

- long-continued use, (34) 128; (36) 122; (37) 626; (38) 220.

- loss by leaching, (28) 423; (33) 122; (36) 725.

- loss from soils, (29) 211.

- loss in industrial wastes, (37) 630.

- low-grade, (35) 899.

- manufacture, (38) 423.

- methods of analysis, (27) 205, 515, 609; (30) 809; (31) 806.

- methods of applying for tobacco, (26) 133.

- microscopical analysis, (30) 809.

mineral, effect on—

- activity of soil bacteria, (31) 821.

- nitrogen transformation in soils, (33) 620.

- plant growth, (31) 27.

- soil bacteria, (33) 515.

- mixed, solubility of potash in, (31) 207.

- mixing, (27) 423; (28) 508; (31) 29, 218; (38) 519.

- mixing with seed, (34) 517.

- nature and use, (27) 521; (34) 326.

- net returns at 1916-17 prices, (39) 217.

- new views on, (31) 516.

- nitrogenous, *see* Nitrogenous fertilizers.

- notes, (28) 423; (30) 720; (31) 723.

- organic and mineral, separation, (33) 12.

- organic nitrogenous compounds, (37) 216.

- penetration of soils by, (27) 420.

- phosphatic, *see* Phosphates.

- pot tests v. field trials, (33) 817.

- potash, *see* Potash.

- preparation and use, (31) 823.

- preparation from sewage, (28) 619; (31) 417.

- prices, 1907-1917, (38) 521.

- processed, nitrogen in, (32) 217; (34) 327.

production—

- and use, (30) 223; (31) 424; (32) 425; (35) 631.

- and use in Russia, (30) 720; (31) 29.

- and use in the South, (29) 213.

- and use under war conditions, (37) 724.

- in Germany in 1912, (29) 128.

- in Japan, (29) 729.

- profits from, (38) 219.

- purchase and use, (27) 128; (32) 325, 621; (36) 220.

- purchasing, (29) 213; (33) 821.

- purchasing and home mixing, (26) 521.

- purchasing in Netherlands, (34) 893.

- radioactive, examination, (36) 414.

- radioactive, tests, (28) 521; (29) 731; (31) 31, 821;

- (32) 519, 722.

- registered, (29) 367.

relation to—

- apple fire blight, (28) 144.

- bacteria, (28) 727.

- cold resistance in plants, (39) 525.

- dry spot of cereals, (29) 46.

- grape chlorosis, (26) 344.

- nicotin content of tobacco, (35) 333.

- soil fertility, (29) 213; (30) 821.

- remedying scarcity of, (36) 220.

residual—

- effects, (26) 331; (28) 122; (31) 319, 516; (34) 25; (36) 324, 829.

- value, (37) 133, 230; (38) 527.

- value, determination, (34) 22.

- review of investigations, (27) 128; (28) 221;

- (29) 821; (31) 723; (35) 516.

- review of literature, (28) 325.

- sampling, (29) 517; (36) 299, 711; (37) 9.

- school exercises in, (31) 599.

- secondary actions, (27) 622.

- secondary and subsidiary effects, (30) 26.

Fertilizers—Continued.

- sources, availability, and use, (31) 30.
 - sources, value, and use, (33) 124.
 - statistics, (27) 328; (33) 218, 219.
 - status of investigations, (27) 622.
 - supply in England, (37) 215.
 - supply in United States, (38) 820.
 - textbook, (38) 196.
 - time of application, (26) 233.
 - treatise, (26) 34, 124, 521; (27) 218; (31) 517; (36) 119; (39) 724.
 - unbalanced, effects, (40) 621.
 - use, (26) 127, 521, 724, 725; (28) 726; (31) 217, 421; (35) 325, 338; (36) 24, 425, 520; (37) 227; (38) 119.
 - use against—
 - beet rots, (30) 244.
 - plant parasites and diseases, (27) 128.
 - weeds in pastures, (31) 38.
 - use in—
 - Canada, (30) 627; (37) 425.
 - Canary Islands, (31) 517.
 - Central America, (31) 723.
 - China, (31) 723.
 - citrus groves, (36) 743.
 - corn belt, (27) 531; (38) 325; (29) 623.
 - dry seasons, (26) 522.
 - forests, (28) 843.
 - Germany, (36) 726.
 - greenhouses, (33) 42.
 - Guadeloupe, (27) 825.
 - Holland, (30) 720.
 - Hungary, (27) 422; (30) 222.
 - Japan, (28) 221; (29) 729; (30) 520.
 - pond culture, (29) 731.
 - relation to weather, (36) 510.
 - Russia, (27) 521, 825.
 - Spain, (26) 728; (27) 328, 423.
 - the Alps, (27) 218.
 - the South, (26) 819.
 - United States, (27) 22, 328; (31) 424.
 - war time, (38) 723.
 - use of nitrate of soda in (26) 33; (27) 723.
 - of peat in, (39) 425.
 - on clay soils in Nebraska, (30) 220.
 - on marsh and sandy soils, (33) 325.
 - on peat soils, (37) 134, 720.
 - with barnyard manure, (28) 625.
 - utilization by crops, (34) 327.
 - utilization by plants, (36) 217.
 - v. manure, (32) 747; (35) 815.
 - valuation, (26) 311, 524, 725; (28) 721; (31) 17, 221; (32) 822.
 - value and use, (33) 724, 817.
 - yearbook, (29) 213; (34) 28.
- Fertilizing constituents excreted by steers, (39) 576.
- Ferula* sp., carotinoid content, (31) 803.
- Fescue—
- as forage crop, (31) 829.
 - as pasture crop, (39) 130, 434.
 - grass, culture experiments, (38) 133.
 - grass ergot, notes, (31) 539.
 - growth on volcanic ash, (32) 36.
 - hard, culture experiments, (40) 136.
 - irrigation experiments, (32) 224.
 - meadow—
 - and clover, yields, (40) 732.
 - composition and digestibility, (36) 469.
 - composition at different stages, (39) 836.
 - culture experiments, (28) 532; (29) 631; (33) 33; (40) 136.
 - for irrigated pastures, (40) 432.
 - for muskeg lands, (37) 229.
 - on bog and moss soils, (40) 212.
 - pollination experiments, (37) 735.
 - varieties, (29) 139.
 - variety, new, (39) 633.
 - variety tests, (40) 232.
 - yields, (37) 227; (39) 336.
 - red, culture experiments, (28) 431; (36) 32.
 - root systems of, (35) 639.
 - seeding on ranges, (30) 35.
 - tall, culture under irrigation, (33) 228.
 - tall, digestibility, (32) 168.
 - Wakeman, culture in New Zealand, (29) 428.
- Festuca—
- ash constituents of, (30) 334.
 - duriuscula, seeding on ranges, (30) 35.
 - elator, drought resisting qualities, (28) 533.
 - pratensis, germination experiments, (31) 227.
 - rubra, composition and digestibility, (36) 469.

Festuca—Continued.

- rubra, var. fallax, analyses, (31) 863.
 - spp., culture experiments, (27) 234.
- Feterita—
- and corn, transpiration, (39) 440.
 - as dry-farm crop, (39) 736.
 - breeding experiments, (39) 736.
 - chemistry of, (40) 608.
 - chop, analyses, (34) 467; (36) 765; (38) 369.
 - composition and food value, (31) 358.
 - culture—
 - experiments, (32) 526; (33) 32, 332; (34) 630; (35) 829; (37) 132, 331, 730; (38) 829, 831; (40) 432, 433.
 - in Arizona, (32) 226.
 - eastern Oregon, (38) 432.
 - Kansas, (39) 33.
 - Texas, (35) 440; (39) 538, 838.
 - digestibility, (39) 171.
 - digestibility and productive value, (37) 865.
 - fats and fatty acids of, (38) 410.
 - feeding value, (39) 71, 174.
 - fertilizer experiments, (38) 431, 830, 832.
 - flour, baking tests, (33) 64.
 - foods, recipes, (31) 358.
 - for silage, yields and value, (38) 174.
 - grain, digestibility, (36) 661.
 - hydrocyanic acid in, (33) 234.
 - improvement, (40) 737.
 - notes, (29) 141.
 - seeding experiments, (38) 630.
 - starch content, (35) 108.
 - use in bread making, (34) 67.
 - varieties for central and southern Great Plains, (35) 832.
- Fetlock injury in horses, treatment, (30) 185.
- Fetus—
- development, factors affecting, (33) 266.
 - development, nutrients required for, (28) 570, 574; (31) 370.
 - hormones of, (30) 201.
 - protein metabolism of, (26) 363.
- Fetuses—
- of twin cattle, (40) 466.
 - transmission of antibodies to, in utero, (38) 284.
- Fever, relapsing, transmission, (40) 550.
- Fiber—
- coniferous, variation in length, (33) 143.
 - crops—
 - culture experiments, (34) 228.
 - culture in Dutch East Indies, (30) 697.
 - notes, (26) 835.
 - of Chile, (38) 336.
 - crude, see Cellulose.
 - from *Epilobium* and *Typha*, (39) 510.
 - from *Hedychium coronarium*, (39) 638.
 - from nettle, (40) 35.
 - industry in Antigua, (38) 336.
 - industry in British East Africa, (33) 530; (34) 227.
 - industry in Mauritius, (34) 227, 434.
 - of Malvaceae, (36) 803.
 - olona, (40) 529.
 - plant, new, in Texas, (30) 733.
 - plant, new, notes, (27) 33.
 - plants—
 - check list, (38) 637.
 - culture experiments, (29) 538; (31) 733.
 - culture in Australia, (40) 524.
 - culture in German colonies, (34) 227.
 - fertilizer experiments, (31) 733.
 - for Rhodesia, (40) 333.
 - improvement, (28) 736.
 - in Philippines, (36) 336.
 - Indian, studies, (27) 431.
 - kapok-like, (38) 529.
 - notes, (39) 142, 837.
 - of Cape Province, (40) 527.
 - Dutch East Indies, (40) 435.
 - Philippines, (31) 332; (32) 37; (33) 433; (39) 231, 739.
 - South Africa, (40) 238.
 - treatise, (30) 436.
 - varieties, (31) 733.
 - testing machines, value for wool, (26) 769.
 - zibethicus, parasites of, (33) 863.
- Fibers—see also Hemp, Hennequen, etc.
- check list, (38) 637.
 - commercial valuation, (34) 227.
 - from various sources, (31) 526; (39) 442.

Fibers—Continued.

- manila, distinguishing in rope, (39) 15.
- of Belgian Kongo, (37) 534.
- of Dutch East Indies, (34) 227.
- Philippine, grading and handling, (32) 828; (36) 634, 635.
- production and utilization, (40) 333.
- production in Philippines, (36) 635.
- textile plant, strength of, (29) 312.
- textile, use in chemical analysis, (38) 9.
- tropical, paper-making value, (34) 227.

Fibrin—

- from different animals, analyses, (38) 110.
- hydrolysis of, (26) 22.
- hydrolyzed with ferric chlorid, nitrogen distribution, (39) 204.
- nitrogen distribution in, (38) 310.
- nutritive value, (40) 463.
- role in glycogen formation, (31) 763.
- studies, (33) 201.
- swelling in polybasic acids and their salts, (38) 502.

Fibrogen, determination, (29) 408.

Fibrolysin, nature and use, (26) 580.

Fibrosis, relation to tuberculosis, (26) 179.

Ficaria, relative number of stamens and pistils, (39) 330.

Ficus—

- carica, insects affecting, (30) 454.
- carica, proteolytic enzymes in latex, (31) 409.
- coronata, latex of, (31) 13.
- elastica—
 - borer pests of, (33) 657.
 - latex, coagulation, (26) 50.
 - new beetle affecting, (26) 151.
- laurifolia latex as a vermifuge, (38) 884.
- Mexican and Central American species, (37) 244.
- nota, capricification in, (30) 55.
- truck rot, notes, (37) 246.

Fidia viticida, see Grape root worm.

Fidiobia rugosifrons n. sp., description, (36) 556.

Field crop—

- competitions for boys and girls, (34) 493.
- competitions in Canada, (33) 697.
- diseases—
 - descriptions, (30) 351.
 - notes, (27) 644; (28) 238, 450, 645; (31) 343, 746.
 - prevalence in Texas, (26) 645.
 - treatment, (27) 452; (32) 545.

Field crops—see also Crops, Forage crops, and specific crops

- as affected by radioactive earth, (33) 123.
- as affected by windbreaks, (30) 134.
- at Belle Fourche Experiment Farm, (33) 829.
- at San Antonio Experiment Farm, (33) 830.
- at Truckee-Carson reclamation project, (33) 728.
- classification of varieties, (27) 31.
- comparative yielding capacities, (40) 624.
- cooperative experiments, (27) 430.
- cost of production, (27) 390; (29) 690; (30) 333; (32) 527; (33) 292; (34) 137; (35) 691; (36) 441; (37) 190; (38) 634.
- critical periods of, (35) 114.
- culture, (27) 430.
- culture—
 - continuous, (31) 226.
 - experiments, (26) 534, 830; (27) 638; (32) 35; (33) 226, 728.
- in Dutch East Indies, (37) 134.
- Great Plains area, (33) 632.
- Grenada, (39) 738.
- India, (39) 229, 230, 738.
- Netherlands, (31) 596.
- New Hampshire, (33) 791.
- Ontario, (39) 738.
- Russia, (35) 636.
- treatise, (35) 30.
- destruction by crawfish, (27) 550.
- drought resistance of, (28) 633.
- dynamiting experiments, (35) 30.
- enemies, (27) 756.
- fertilizer experiments, (26) 817, 830; (27) 334, 638; (28) 532.
- for late planting, (37) 436.
- for the cotton belt, textbook, (36) 897.
- foreign, notes, (26) 689; (27) 194, 796, 797, 895.
- fungus diseases of, (26) 341.
- home projects in, (40) 296.

Field crops—Continued.

- improvement, (26) 434.
- in Canada in 1916, (40) 792.
- Indian names, (37) 436.
- insects affecting, (27) 53, 356, 552, 644, 755; (28) 238, 450; (29) 252, 852; (31) 648, 848; (32) 448; (33) 153, 555, 746; (36) 457; (37) 459; (38) 459, 556.
- inspection, (40) 299.
- instruction in, (28) 537.
- irrigation experiments, (33) 683.
- laboratory exercises, (27) 394.
- laboratory materials for, (26) 297; (35) 93.
- management in southwest Missouri, (33) 33.
- manual, (28) 493; (40) 622.
- manurial requirements, (38) 432.
- marketing, (29) 595.
- native, culture in Madras, (38) 230.
- nomenclature, (39) 833.
- of Agra and Oudh, (31) 235.
- of India, geographical distribution, (33) 526.
- pedigreed—
 - in Michigan, (40) 233.
 - in Wisconsin, (40) 624.
 - seed, value, (40) 228.
- phenological data, (33) 825.
- plat experimentation, (26) 434.
- pollination, (36) 527.
- potash hunger, (37) 800.
- prices off in 1912, (29) 190.
- production in Argentina, (27) 193.
- production in United States, (26) 190.
- relation between size of seed and yield, (26) 434.
- relation to climate, (28) 27.
- review of German literature, (37) 142.
- root systems of, (26) 129.
- school lessons on, (32) 597; (35) 592.
- seeding, (35) 740.
- seeding card, (39) 834.
- slugs affecting, (26) 658.
- southern, course of study, (40) 492.
- statistics in British Empire, (28) 295.
- statistics in United States, (28) 389.
- textbook, (31) 791; (35) 593.
- value of line selection, (40) 623.
- varietal nomenclature, (37) 437.
- varieties, (26) 830; (27) 638.
- water requirements, (29) 825; (34) 228; (38) 227, 228.
- water requirements in India, (27) 429.
- work—
 - at Rothamsted, (40) 823.
 - cooperative, in Ontario, (40) 624.
 - in Antigua, (40) 522.
 - Australia, (40) 230, 524, 825.
 - Barbados, (40) 434.
 - British Guiana, (40) 242.
 - Burma, (40) 523.
 - Canada, (40) 228.
 - Fiji, (40) 231.
 - Hawaii, (40) 823.
 - India, (40) 230, 332, 523, 625, 825.
 - Montserrat, (40) 228.
 - Nigeria, (40) 230.
 - Northumberland, (40) 624.
 - Philippines, (40) 228.
 - Rhodesia, (40) 230.
 - Union of South Africa, (40) 524.

Field—

- experimental methods, standardization, (28) 537.
- experiments—
 - accuracy in, (28) 198; (34) 827.
 - correcting for soil differences, (34) 829.
 - correlation coefficient between neighboring plats, (33) 728.
 - error in, (26) 732; (28) 827; (29) 233; (30) 32, 33; 134, 621; (31) 226; (32) 121; (37) 528, 634, (38) 743.
 - interpretation, (26) 434, 732; (30) 621; (31) 327.
 - methods, (32) 333; (36) 527.
 - plant growth studies in, (31) 704.
 - size and number of plats in, (29) 734.
 - soil homogeneity in, (33) 727.
 - standardization, (39) 825; (40) 823.
 - technique, (38) 429.
 - theory of probabilities in, (31) 44, 220.
 - use of parallel plats in, (34) 634.
 - v. farm practice studies, (30) 32.

- Field—Continued.
 experiments—continued.
 v. laboratory experiments in soil bacteriology, (36) 213.
 laboratories, small, for research work, (33) 793
 management and crop rotation, textbook, (33) 429.
 thistle, geographical distribution, (26) 335.
 work records, keeping, (30) 897.
- Fig—
 Botrytis disease, notes, (37) 457.
 black smut, notes, (40) 52.
 Blastophaga in California, (40) 264.
 borer, notes, (40) 853.
 canker, notes, (38) 454.
 dieback, notes, (38) 454.
 diseases, descriptions, (39) 757.
 insects, synoptic lists and descriptions, (30) 55.
 leaf blight, cause, (38) 252.
 leaf blight, studies, (37) 652.
 moth, notes, (37) 156.
 moth, studies, (26) 248, 249.
 must, fermentation, (37) 314.
 preparations, analyses, (35) 558.
 rust, notes, (37) 453.
 scale, Mediterranean, in California, (37) 563.
 stem-boring beetle, notes, (27) 54.
 tree borer, three-lined, studies, (38) 363.
 Figites popenoei n.sp., description, (33) 360.
 Figs—see also Caprifigs.
 abnormal roots of, (29) 849.
 analyses, (26) 68.
 breeding experiments, (29) 338.
 caprification, (27) 744.
 cold storage of, (32) 439.
 crown gall affecting, (28) 447.
 culture, (40) 149, 838.
 culture—
 experiments, (28) 236; (29) 338; (34) 231.
 in Arizona, (32) 232; (36) 341.
 California, (36) 742.
 Florida, (38) 845.
 Mexico, (30) 144.
 southern Texas, (32) 539.
 Texas, (37) 835.
 dried, analyses, (30) 861.
 dried, preparation and use, (29) 462.
 drying, (27) 146; (37) 114.
 edible, from wild seed, (39) 527, 544.
 freeze injury, notes, (39) 843.
 fungus disease of, (26) 449.
 host plant of fruit fly, (26) 758.
 host plant of purple scale, (26) 756.
 insects affecting, (26) 147; (30) 454; (33) 747.
 Smyrna, culture in California, (27) 744; (34) 534.
 sycamore, in Egypt, (36) 445.
 varieties, (32) 232; (38) 41.
- Filaria—
 baneroffi in District of Columbia, (36) 657.
 immitis, growth of embryos in vitro, (31) 281.
 immitis of dogs, notes, (27) 86.
 in blood of horses, description, (26) 287.
 in horses, transmission by stable flies, (34) 359.
 in Philippines, (34) 879.
 labiato-papillosa in Philippines, (37) 277.
 stomoxeas, notes, (29) 83.
 transmission by Chrysops, (36) 86.
- Filariasis—
 etiology, (39) 477.
 in America, (38) 580.
 horses, (33) 285; (35) 362.
 horses, camels, and hares, (30) 679.
 horses, treatment, (37) 692.
 Hungarian horses, (39) 190.
- Filbert—
 bacterial disease, notes, (34) 351.
 bud mite, notes, (32) 651.
 disease in Oregon, (32) 647.
 leaves, symbiosis with fungi, (37) 327.
- Filberts—
 culture experiments, (37) 243.
 culture in Pacific Northwest, (37) 545.
- Filter—
 Ames, description, (27) 805.
 Berkefeld improved, description, (30) 489.
 Berkefeld, usefulness, (34) 390.
 flask, description, (37) 711.
 paper pulp—
 description, (35) 314.
 for separation of solids from liquids, (36) 111.
- Filter—Continued.
 paper pulp—continued.
 notes, (38) 506.
 use in quantitative analysis, (35) 204.
 paper, reducing matter in, (37) 409.
 rapid, for turbid liquids, (35) 612.
 sands, incrustation on, (29) 617.
- Filtering—
 rack for sugar solutions, (39) 505.
 tube, description, (38) 411.
- Filters—
 deep percolating, efficiency, (34) 888.
 household and faucet, notes, (30) 620.
 household, notes, (29) 815.
 mechanical, tests, (34) 483.
 permeability by microorganisms, (28) 677.
- Filtration—
 apparatus, description, (35) 204.
 apparatus, description and uses, (39) 804.
 effect on diastatic activity, (29) 505.
 funnel, description, (40) 409.
- Finance, cooperative, treatise, (28) 790.
- Finches of Sudan, (26) 855.
- Finger-and-toe disease, treatment, (26) 747; (31) 218, 842.
- Finger grass—
 eradication, (27) 733.
 notes, (26) 361.
- Fingerhuthia africana, analyses and digestibility, (27) 871; (32) 167.
- Finnish Moor Culture Society, report, (29) 516.
- Fiorin, identity and agricultural characteristics, (39) 532.
- Fiorinia—
 florinae, notes, (28) 854.
 spp., notes, (28) 754.
- Fique as a fiber plant, (37) 233.
- Fir—
 alpine, and Engelmann spruce, management, (33) 739.
 aphid, silver, notes, (26) 147.
 balsam—
 clearing out, (40) 842.
 factors influencing reproduction, (38) 45.
 of Rocky Mountains, (34) 742.
 reproduction by layering, (28) 344.
 spruce budworm on, (39) 866.
 studies, (30) 843.
 beetle, Douglas, notes, (26) 561.
 bud moth, notes, (35) 258.
 cones, insects affecting, (31) 849.
 cross-arms, tests, (27) 443.
- Douglas—
 ash analyses, (35) 327.
 breakage, defect, and waste, (37) 651.
 bridge stringers, tests, (35) 584.
 cost of growing, (26) 49.
 creosoting, (37) 386.
 density and porosity, (32) 47.
 determination of site qualities, (31) 537.
 development on burned areas, (33) 739.
 fiber dimension studies, (35) 734.
 fiber measurements, (36) 345.
 fire-killed, utilization, (28) 49, 57.
 for shipbuilding, (37) 452.
 grading, (35) 188.
 growth data, (34) 440.
 habitat extension, (29) 545.
 liming experiments, (33) 739.
 needle blight of, (37) 658.
 oil composition and properties, (27) 115.
 oil of, (31) 201; (37) 411.
 parch blight or scorching of, (36) 547.
 plantation, girth increment in, (32) 237.
 plantation in Gloucestershire, (30) 744.
 plantation in Perthshire, (29) 644.
 plantation in North Wales, (30) 46, 446.
 productive capacity, (36) 243.
 reforestation, (29) 545.
 resins of, (30) 10.
 seed from different sources, tests, (28) 543.
 seed spotting under aspen, (29) 544.
 seeds of, (33) 739; (38) 45, 347.
 strength tests, (35) 241.
 thinning experiments, (32) 47.
 tolerance for lime, (36) 447.
 unit stresses for, (36) 91.
 volume tables for, (34) 641.
- dry rot, studies, (31) 547.

Fir—Continued.

- grand, Echinodontium-infected, thinning, (40) 842.
 - insects affecting, (31) 155; (36) 853.
 - insects affecting in Sweden, (36) 853.
 - long-seasoned Douglas, strength tests, (29) 442.
 - management in the Vosges, (39) 246.
 - pitch moth, studies, (33) 454.
 - red, leaf and twig oils of, (33) 409.
 - seedlings, absorption of fertilizers by, (26) 443.
 - stands, effect on soil physics, (26) 140.
 - thinning experiments, (36) 345; (37) 147.
 - timber estimating tables for, (36) 345.
 - timber nailed joints, tests, (38) 892.
 - trees of North America, characteristics, (32) 748.
 - trees, yield graphs, (39) 352.
 - trunk bark louse, European, notes, (35) 256.
 - waste, destructive distillation, (34) 153.
 - waste, use in tannin-extract industry, (34) 508.
 - white, oils of, (33) 203.
 - white, pathology of, (35) 43.
 - witches' brooms affecting, (28) 350.
 - withertip—
 - description, (35) 850.
 - in Sweden, (32) 844.
 - studies, (30) 453.
 - wood, production of turpentine from, (26) 413.
- Fire blight—**
- description, (33) 447.
 - description and treatment, (29) 348, 551.
 - dissemination by insects, (33) 744; (36) 351; (38) 558.
 - dissemination by tarnished plant bug, (30) 650.
 - in Wyoming, (34) 747.
 - insect carriers, (39) 251.
 - notes, (33) 98; (37) 554, 652.
 - organism, longevity, (36) 50.
 - studies, (35) 848; (36) 50, 250; (38) 353; (40) 746.
 - transmission by aphids, (37) 151, 157.
 - transmission by bees, (36) 59; (37) 53; (38) 164.
 - treatment, (36) 347; (37) 195.
- Fire—**
- control, county organization for, (39) 594.
 - extinguishing instruction in agricultural schools, (31) 394.
- Insurance—**
- farmers' mutual, (37) 391, 594; (40) 593.
 - in Denmark, (27) 794.
 - mutual, in Illinois, (36) 791.
 - mutual, in Nebraska, (26) 594.
 - pervention and fire fighting on the farm, (38) 492.
 - protection for grain fields, (39) 393.
 - retardants, tests, (36) 687.
- Fireless cookers, see Cookers, fireless.**
- Fires—**
- due to spontaneous combustion, (37) 788.
 - extinguishing with sawdust, (28) 788.
 - forest, *see* Forest fires.
- Firewood—see also Wood, fuel.**
- machinery for cutting, (40) 588.
 - use on farms, (37) 92.
- Fireworm—**
- black-head, *see* Eudemis vacciniana.
 - yellow-head, *see* Peronea minuta.
- Fish—**
- analyses, (29) 626; (31) 624; (35) 557.
 - and game laws of Massachusetts, (26) 59.
 - and game laws of Michigan, (26) 59.
 - artificial digestive experiments, (28) 66.
 - as affected by—
 - fertilizers, (29) 821.
 - polarized light, (31) 759.
 - water pollution, (29) 315; (30) 319.
 - as cattle food, (32) 862.
 - food, chemical study, (39) 366.
 - food resource, (38) 165.
 - source of oil and manure, (32) 219.
 - blanching for canning, (33) 66.
 - canned—
 - and cured, industry in United States, (31) 67.
 - inspection, (27) 565.
 - spoilage, (26) 66.
 - canning, (39) 317.
 - canning industry, (40) 864.
 - canning, salting, and smoking, (37) 716.
 - changes in during cold storage, (27) 460.
 - cold storage of, (31) 64, 459, 659.
 - commercial stocks, 1918, (39) 570.
 - composition, (26) 463.

Fish—Continued.

- composition and food value, (29) 765.
- conservation by freezing, (36) 509.
- culture in rice fields, (30) 675.
- culture, notes, (28) 28.
- cured and salted, in United States, (38) 866.
- cured, as human food, (35) 859.
- curing, (33) 660.
- destruction of mosquitoes by, (27) 656; (38) 260.
- detritus as feeding stuff, (36) 273.
- diet, effect on intestinal flora, (40) 867.
- digestibility, (39) 266.
- diseases, notes, (28) 279.
- distribution to Minnesota farmers, (38) 155.
- dried, fertilizing value, (31) 124.
- dried, pest in Hawaii, (40) 266.
- edible, of Chile, (32) 161.
- effect of withholding sewage on, (27) 512.
- fat content in relation to habitat, (31) 459.
- fat, digestibility, (36) 860.
- feeds and fertilizers, analyses, (32) 219.
- fertilizer and oil, production in Alaska, (31) 727.
- fertilizer from, (31) 622.
- fertilizer, tests, (37) 321.
- fertilizers—
 - analyses, (28) 722; (39) 222.
 - availability of nitrogen in, (28) 724.
 - composition, (34) 28.
 - composition and use, (27) 727.
 - fertilizing value, (28) 724; (39) 222, 270, 328.
- food, composition, (37) 63.
- food value and use, (32) 662.
- freezing and storing, (39) 165.
- fresh-water, food value, (40) 555.
- fresh-water, respiratory exchange, (32) 565.
- gelatin, composition, (40) 171.
- ground, availability of nitrogen in, (26) 124; (27) 723.
- guano—
 - analyses, (28) 523.
 - digestibility, (31) 766.
 - fertilizing value, (34) 219.
 - for arid soils, (36) 726.
- importance as food, (32) 251.
- industry in United States, (26) 155.
- killed by cold wave in Florida, (37) 513.
- law in New York, (28) 248.
- laws—
 - handbook, (32) 150.
 - in New Jersey, (27) 856.
 - Pennsylvania, (27) 355; (34) 650.
 - United States and Canada, handbook, (30) 153.
 - Washington, (27) 254.
 - West Virginia, (26) 854.
- liver oil for pigs, (28) 171.
- loss of weight during cooking, (26) 463.
- losses in marketing and cooking, (28) 165.
- louse, notes, (38) 661.
- manure, export from India, (33) 327.
- marketing in California, (39) 90.
- meal—
 - acidity, (35) 770.
 - adulteration, detection, (34) 467.
 - analyses, (26) 267, 363, 770; (27) 570, 872; (28) 669; (29) 367; (30) 67; (31) 467, 864; (32) 259; (33) 170, 870; (34) 263, 467; (35) 128, 769; (36) 667, 765.
 - as feeding stuff, (29) 270; (31) 366, 563; (33) 169; (35) 769.
 - bacilli from, (33) 281.
 - composition, (31) 563, 864.
 - digestibility, (31) 766.
 - for cows, (38) 679.
 - for pigs, (33) 571; (35) 272; (36) 571; (38) 472.
 - palatability and nutritive value, (38) 66.
 - pathogenic bacterium in, (32) 178.
- milt and roe, analyses, (31) 656.
- milt as human food, (30) 61.
- muscle, composition, (40) 171.
- new distomes from, (33) 773.
- nomenclature, (40) 160.
- nutritive value, (26) 259; (40) 66.
- oil, analyses, (28) 493.
- oil for calves, (30) 671.
- oil, hydrogenized, use in oleomargarin, (33) 363.
- oil, menhaden, detection, (28) 412.
- oil soap sprays, wetting power and efficiency, (36) 455.

Fish—Continued.

- oils, determination of hexabromid value, (40) 205.
- oils, production in United States, (40) 614.
- packing for transport, (27) 461.
- phosphorus content, (27) 461.
- poison, action of digestive ferments on, (34) 459.
- poisoning in Virgin Islands, (40) 863.
- poisoning, studies, (34) 459.
- ponds, fertilizer experiments, (29) 731; (31) 29; (32) 217.
- ponds, management, (27) 374.
- ponds, notes, (34) 569.
- preservation, (29) 566, 659; (30) 861.
- preservation in the Tropics, (32) 63.
- preserved, of ancient Egyptians, (30) 559.
- preserving for domestic use, (38) 468.
- production and protection in United States, (38) 663.
- products in United States, (35) 366.
- purchasing and use, (38) 867.
- putrefaction of, (34) 163.
- rare, sold for food in east London, (30) 163.
- recipes, (38) 165, 468.
- refrigeration, (28) 563.
- respiratory exchange in, (33) 664.
- roe as human food, (30) 61.
- salt, recipes, (37) 670.
- sausage, notes, (31) 460, 759.
- scrap, analyses, (29) 318; (31) 663; (32) 169; (33) 71, 371; (34) 169; (35) 374, 867; (36) 65, 167, 268, 667; (37) 767; (38) 67; (39) 270; (40) 571, 665.
- scrap fertilizer industry—
 - in United States, (28) 625.
 - of Atlantic coast, (30) 326.
 - of Pacific coast, (32) 519.
- scrap—
 - fertilizing value, (30) 835; (32) 219; (34) 28; (38) 517; (40) 724.
 - ground, analyses, (26) 362.
 - methods of analysis, (29) 318.
 - preparation and analyses, (32) 519.
 - production and use, (33) 218, 219.
- sea, feeding value, (27) 378.
- selection, (36) 762.
- shipping long distances, (35) 162.
- storage, (39) 165, 770.
- supplementing meat supply with, (31) 356.
- use in French army, (28) 659, 660.
- waste, analyses, (34) 28.
- waste, analyses and feeding value, (39) 70.
- waste, fertilizing value, (39) 429.
- water content as affected by cooking, (26) 462.

Fisheries—

- industry in Alaska, (31) 727.
- State administration and control, (40) 688.
- statistics in Alaska, (36) 862.

Fishery—

- problems, research on, (40) 459.
- products, preservation in the Tropics, (32) 63.
- Fishing, review of literature, (27) 845; (30) 238; (33) 49.

Fistula of withers, handbook, (39) 190.

Fistulous withers, treatment, (26) 277; (30) 185; (31) 434; (36) 675.

Flacherie—

- destruction, (27) 559.
- infection experiments, (27) 559.

Flagellates—

- from ulcers in a buffalo, (26) 784.
- in soils, (35) 121.
- notes, (26) 246.
- parasitic in dog flea, (33) 862.

Flame tree, crown gall affecting, (28) 447.

Flask for determination of water in flour and meal, (30) 506.

Flask-shaking machine, description, (36) 413.

Flasks, suction, check valve for, (34) 608.

Flat peas for pigs, (28) 364.

Flatfish that have died in water, detection, (31) 356.

Flavin—see also Proflavin.

- antiseptic value, (39) 387; (40) 182.
- compounds, antiseptic value, (39) 680.

Flavone derivatives in plants, (36) 329; (37) 430.

Flavones of Rhus, (39) 431.

Flavoring—

- compounds, treatise, (33) 164.

Flavoring—Continued.

- extracts—
 - analyses, (35) 558.
 - determination of essential oil in, (39) 505.
 - examination, (36) 362.
 - treatise, (28) 863.

Flax—

- analyses, (28) 477.
- and hemp fiber, microscopic differences, (26) 828.
- anthracnose, studies, (37) 47.
- as affected by lithium salts, (28) 526.
- as nurse crop for alfalfa, (32) 430.
- binder twine from, (27) 534.
- blight, notes, (37) 248.
- bran, analyses, (28) 464.
- breeding experiments, (29) 634; (30) 637; (35) 339, 819.
- by-products, analyses, (29) 270.
- by-products, digestibility, (29) 367.
- chaff, analyses, (38) 666.
- cost of production, (32) 594, 688; (35) 691.
- critical period of growing season, (39) 811.
- cross-breeding experiments, (34) 629; (36) 434.
- culture, (26) 536; (30) 399; (31) 524; (33) 232, 632, 636; (39) 837; (40) 827.
- culture—
 - and handling, (36) 230.
 - and harvesting, (32) 135; (36) 735.
 - and improvement, (28) 442.
 - experiments, (26) 38, 129, 233, 630; (27) 336, 638; (28) 633; (29) 427, 431, 630; (32) 132, 430, 529, 530; (33) 31, 633, 830; (34) 137, 228, 229; (35) 827; (36) 32, 33, 132, 335; (37) 227, 228, 537, 734; (38) 132, 634, 825; (39) 227, 229, 434, 435, 632, 735, 834, 835; (40) 332, 438, 735.
 - for seed in Argentina, (34) 434.
 - in ancient Egypt, (37) 537.
 - Argentina, (35) 136.
 - Australia, (32) 399.
 - British East Africa, (34) 35.
 - Hawaii, (32) 729.
 - India, (28) 736.
 - Ireland, (40) 827.
 - Montana, (28) 42.
 - North Africa, (39) 837.
 - North Dakota, (40) 736.
 - northern Wisconsin, (28) 828.
 - Oregon, (37) 233.
 - Rhodesia, (27) 32, 637.
 - South Dakota, (36) 635.
 - southern Idaho, (36) 227.
 - Utah, (38) 230.
 - Wyoming, (36) 33.
 - on moorland, (30) 229.
 - on new lands, (29) 634.
 - treatise, (33) 133, 731.
 - under dry farming, (26) 828; (28) 532; (30) 435; (36) 528, 529; (39) 131.
 - under irrigation, (34) 528.
- diseases—
 - notes, (30) 648.
 - studies, (28) 442; (35) 48.
 - treatment, (32) 545.
- effect on soil fertility, (37) 229.
- effect on succeeding crops, (32) 224.
- enzymes, effect on glucosids, (28) 503.
- fall irrigation, (37) 822.
- false chinch bug on, (39) 760.
- feeding value, (36) 735.
- fertility constituents in, (30) 338.
- fertilizer experiments, (26) 233, 424; (27) 32, 435; (29) 318, 625; (30) 636; (31) 133, 230, 332; (32) 136, 630; (34) 330; (38) 33, 634; (40) 735.
- fiber—
 - manufacture, (37) 233.
 - preparation, (33) 232.
 - studies, (38) 646.
 - water absorption capacity, (37) 736.
- Fusarium resistance, (40) 745.
- golden, analyses, (33) 759.
- green manuring experiments, (37) 734.
- growing in Egypt, (40) 438.
- growth in acetylene gas, (27) 827.
- grub of New Zealand, (40) 265.
- grubs of New Zealand, parasites, (39) 159.
- hybrids, correlation studies, (29) 424; (30) 730.
- hybrids, Mendelian segregation in, (32) 521.
- improvement in Russia, (29) 534.
- industry in Africa, (39) 234, 837.

Flax—Continued.

- industry in Sweden, (40) 827.
 - inheritance of wilt resistance in, (36) 845.
 - irrigation, (31) 828.
 - irrigation experiments, (28) 827; (29) 32; (32) 430; (33) 430, 884; (39) 434.
 - leaves, free hydrocyanic acid in, (27) 635.
 - liming experiments, (38) 34.
 - materials, composition and feeding value, (30) 370.
 - meal, analyses, (29) 367; (32) 465; (36) 65.
 - New Zealand, culture experiments, (30) 632.
 - of East Africa Protectorate, (32) 229.
 - on peat soils, fertilizer experiments, (39) 428.
 - pests and diseases in New Zealand, (38) 257.
 - planting and harvesting dates, (26) 532, 533.
 - pollination, (36) 527.
 - potash fertilizers for, (26) 526.
 - preparation, (40) 827.
 - production in Argentina, (27) 193.
 - rate of sowing tests, (27) 435.
 - retting—
 - experiments, (30) 37.
 - Fribes' method, (30) 637.
 - review of literature, (38) 715.
 - studies, (30) 509.
 - root development with other crops, (26) 129.
 - root system, (31) 515; (36) 135, 223; (39) 230.
 - rotation experiments, (33) 429; (36) 736; (38) 129; (40) 331.
 - screenings—
 - analyses, (27) 170; (33) 371.
 - ground, analyses, (29) 666.
 - toxicity toward cattle, (28) 477.
 - seeding experiments, (29) 224, 425; (36) 134; (38) 431; (39) 227, 228; (40) 433.
 - selection experiments, (33) 335.
 - shipments and prices in Minneapolis, (32) 894.
 - shives—
 - analyses, (35) 562; (37) 767; (38) 666.
 - composition and digestibility, (32) 666.
 - digestibility, (31) 766.
 - sowing on winterkilled wheat fields, (28) 829.
 - stem fiber and waste, determination, (32) 415.
 - straw, analyses, (28) 464.
 - straw, paper and fiber-board from, (34) 509.
 - sucrotash, analyses and feeding value, (34) 663.
 - toxicity, (30) 380.
 - varieties, (27) 32, 334, 736; (29) 222, 225, 425, 530, 630; (30) 434, 637, 731; (31) 133, 733, 829; (32) 334, 431, 527, 528, 630; (33) 34, 633; (34) 630; (35) 31, 526, 829; (36) 32, 33, 34, 132, 133, 437, 530, 635, 736; (38) 31, 230, 431, 634.
 - varieties for Montana dry lands, (35) 735.
 - variety and geographical source, effect on oil product, (39) 208.
 - variety tests, (39) 227, 228, 334, 336, 434, 436, 437, 735, 835; (40) 332, 730, 732, 735.
 - waste as source of potash, (37) 817.
 - water requirements, (32) 127.
 - water requirements in India, (27) 429.
 - wilt—
 - investigations, (38) 449.
 - relation to temperature, (39) 249.
 - studies, (36) 748.
 - yields, (30) 134.
- Flaxseed—**
- and legume combinations, preparation, (38) 365.
 - as affected by freezing, (36) 136.
 - bushel weights, (37) 889.
 - cake meal, analyses, (28) 464.
 - cleaning, (40) 40.
 - culture and analyses, (30) 637.
 - damaged, examination, (31) 658.
 - formation of hydrocyanic acid in, (27) 132.
 - germination as affected by green manures, (33) 331.
 - ground, analyses, (27) 774.
 - ground, for pigs, (37) 268.
 - hydrocyanic acid in, (35) 167.
 - meal, analyses, (29) 467, 769; (36) 765.
 - oil, chemistry of, (36) 206.
 - oil feed, analyses, (39) 167.
 - press cake, analyses, (40) 72.
 - production, (26) 595, 792; (36) 736.
 - protein, nutritive value, (39) 666.
 - screenings, analyses, (27) 774; (28) 464.
 - screenings, poisoning of live stock by, (26) 86.
 - treatment, (30) 637.
 - treatment, (39) 238; (40) 443.

Flaxseed—Continued.

- water-soluble carbohydrates in, (32) 802.
 - yield as affected by depth of plowing, (30) 232.
- Flea beetle—**
- banded, (35) 54.
 - bronze, notes, (32) 556.
 - destruction by white fungus, (26) 454.
 - green, notes, (33) 746.
 - notes, (32) 550.
 - remedies, (33) 158.
 - wavy striped, notes, (32) 556.
 - yellow-necked, notes, (29) 456.
- Flea beetles—**
- as garden pests, (39) 767.
 - affecting—
 - Cruciferae in central Europe, (30) 160.
 - horse nettle, (35) 657.
 - mustard, (34) 65.
 - tobacco, (31) 452; (36) 355; (37) 256.
 - injurious in Quebec, (32) 151.
 - metallic, injurious to strawberries, (30) 758.
 - notes, (28) 654; (29) 761; (36) 854.
 - studies, (40) 357.
- Flea bites, relation to plague transmission, (26) 61.**
- Flea larvae, morphology, (32) 452.**
- Flea-seed in South Australia, (37) 542.**
- Fleas—**
- and their control, (38) 363.
 - bionomics of, (29) 756; (31) 353.
 - destruction with cyanid gas, (36) 456.
 - handbook and bibliography, (30) 554.
 - injurious to domestic animals, (26) 349.
 - injurious to man and domestic animals, (37) 764.
 - new, of America, (36) 257.
 - notes, (33) 657; (34) 159.
 - of Peru, (27) 862.
 - on rats and other rodents in Upper Egypt, (33) 749.
 - rat, *see* Rat fleas.
 - relation to—
 - leishmaniasis, (28) 185; (36) 654.
 - plague, (33) 749.
 - plague-like disease of rodents, (34) 355.
 - remedies, (31) 58, 351, 353.
 - studies, (33) 563.
 - survival of bacteria in, (31) 353.
 - transmission of—
 - leprosy by, (26) 758.
 - plague by, (27) 59, 754.
 - plague-like disease by, (26) 461.
- Flesh—**
- fly, Georgian, notes, (30) 656.
 - meal, ammonification and nitrification under laboratory conditions, (30) 218.
- Flexor pedis perforans tendon, resection, (27) 576.**
- Flies—**
- and disease in the British army, (30) 254.
 - as carriers of infection, (28) 356; (34) 254.
 - as carriers of *Lambia* spores, (30) 254.
 - baits for, (33) 357.
 - biting—
 - in the Punjab, (32) 184.
 - relation to swamp fever, (32) 754.
 - relation to trypanosomiasis, (37) 879.
 - relation to verruga, (32) 248.
 - black—*see also* Simuliidae and Simulium spp.
 - American, synopsis, (31) 254.
 - lesions produced by, (33) 156.
 - relation to pellagra, (28) 853.
 - blood-sucking—
 - notes, (27) 53; (39) 661.
 - parasitic flagellates of, (26) 84.
 - relation to diseases, (29) 760.
 - blue bottle, distance of flight over water, (30) 159.
 - chaetotaxy and pilotaxy of, (35) 660.
 - color preference of, (30) 757.
 - conservation of pathogenic bacteria by, (30) 552.
 - control—
 - in Egyptian campaign, (39) 563.
 - in military camps, (38) 60, 262.
 - in New Jersey, (32) 551.
 - on college farm, (34) 160.
 - paper on, (39) 157.
 - coprophagous, biology, (29) 760.
 - destruction, (34) 856.
 - destruction by bacterial cultures, (34) 254.
 - dissemination of—
 - microorganisms by, (27) 58; (28) 756.

- Flies—Continued.
 dissemination of—continued.
 parasitic worms by, (30) 658.
 pear blight by, (33) 149.
 domestic, of New Jersey, (37) 665.
 flesh, studies, (37) 665.
 flight range of, (30) 658, 756.
 frequenting privy vaults, (39) 766.
 green bottle, dissemination of anthrax by, (23) 678.
 habits and parasites, (36) 256.
 house, *see* House fly.
 hystricine—
 of Peru, (34) 65.
 with white maggots, (34) 65.
 infecting meat, studies, (39) 564.
 injurious to man, (34) 251.
 larvae—
 and pupae in nest of gray-headed sparrow, (32) 555.
 destruction, (33) 455.
 destruction by ants, (28) 255.
 destruction in horse manure, (31) 653; (36) 156.
 relation to rabies, (27) 560.
 larval rôle in dissemination of ascarids, (30) 659.
 manure-breeding, control, (39) 467; (40) 356.
 March, of Australia and Tasmania, (26) 456.
 morphological studies, (37) 358.
 muscid, winter observations, (38) 262.
 muscoid—
 new genera and species, (39) 467.
 notes, (29) 358; (34) 65; (36) 554.
 studies, (26) 860.
 nonlactose-fermenting bacilli in, (30) 757.
 of Yellowstone Valley, (33) 554.
 overwintering, (38) 766.
 phorid, from west coast of South America, (37) 357.
 relation to—
 bacillary enteritis, (38) 363.
 disease, (33) 560.
 epidemic diarrhea, (28) 756.
 filariasis in horses, (35) 362.
 gastro-intestinal diseases, (36) 156.
 myiasis in man and animals, (34) 359.
 pellagra, (27) 156.
 poliomyelitis, (38) 262.
 summer sores, (40) 586.
 Trypanosoma evansi, (27) 53.
 typhoid fever, (28) 258.
 remedies, (29) 299; (30) 159; (31) 57, 58, 158, 351; (32) 753; (36) 853; (37) 53, 260, 464, 560, 665; (38) 282.
 repellents, tests, (32) 59; (38) 679.
 sand, *see* Sand flies.
 seasonal abundance in Montana, (37) 764.
 sense reactions, (40) 859.
 spallanzanine, of Andes, (34) 65.
 structure of larvae, (26) 558.
 studies, (35) 856; (38) 563.
 syrphus, parasitic on cabbage aphids, (26) 149.
 transmission of—
 anthrax by, (31) 776.
 diarrheal diseases by, (31) 654.
 diseases by, (30) 658, 756; (31) 551; (36) 460.
 leprosy by, (26) 758; (31) 851.
 traps for, (38) 60.
 treatise, (30) 552.
 white, *see* White fly.
 wind-forced migration, (39) 861.
- Flindersia australis, strength and elasticity tests, (27) 43.
 Floats, *see* Phosphate rock.
- Flood—
 at Boise, Idaho, (29) 812.
 control for Pecos River, (37) 186.
 control in California, (35) 787; (36) 186.
 control, papers on, (36) 186.
 in Colorado River, (27) 616.
 Louisiana, (30) 417.
 Michigan, (27) 616.
 Ohio Valley in 1913, (30) 18.
 Nile, of 1909, (26) 118.
 Nile, of 1910, (28) 315.
 Nile, of 1911, (30) 511.
 Nile, prediction, (28) 316.
- Flood—Continued.
 protection in Papago Indian Reservation, Arizona, (29) 889.
 protection in Victoria, (30) 887.
- Floods—
 and their prevention, (33) 885.
 at Los Angeles, (32) 25.
 extent and damage caused by, (35) 506.
 in Alabama, (29) 510.
 Cairo, Ill., district, (29) 510.
 California, (37) 486.
 China, (35) 618.
 Colorado and New Mexico, (26) 614.
 Connecticut Valley and Vermont, (31) 214.
 Indiana, (35) 83.
 lower Mississippi, (35) 618.
 New England rivers, (32) 810.
 New York State, (31) 214.
 Ohio, (35) 83.
 Pascagoula and Pearl rivers, (29) 121.
 Scioto Valley, Ohio, control, (36) 584.
 laws in Indiana, (35) 787.
 of March, 1913, recurrence, (31) 615.
 Nile, (34) 413.
 Ohio and lower Mississippi valleys in 1913, (31) 214.
 Ohio and Mississippi rivers, (30) 417.
 Ohio valley, (29) 121.
 Rio Grande and Rio Pecos, (26) 27.
 Sacramento and San Joaquin watersheds, (29) 415.
 southern California, (38) 890.
 spring of 1912, (27) 413.
 the Oder, (26) 317.
 upper Missouri River, (26) 27.
 papers on, (27) 816.
 relation to forests, (29) 642, 842; (31) 515; (32) 237.
 studies, (30) 688.
- Floors, concrete, construction, (30) 487.
- Flora—*see also* Vegetation, Plants, etc.
 fresh-water, notes, (28) 28.
 of Colombia and Central America, (37) 819.
 Cuba, (33) 525.
 India, (33) 855.
 New Mexico, (33) 727.
 New York, (35) 146.
 northern Sahara, (29) 626.
 northwest coast of United States, treatise, (34) 336.
 Rocky Mountains and adjacent plains, (38) 732.
 Salton region, (30) 223.
 Salton Sink, (33) 525.
 Sitka, Alaska, (37) 526.
 southeastern Washington and adjacent Idaho, (31) 731.
 the Northwest, handbook, (30) 521; (32) 898.
 Vermont, (33) 330.
 vicinity of New York, treatise, (33) 429.
 Washington, D. C., and vicinity, (37) 435.
 Wyoming, (38) 255.
 prairie, as affected by forestation, (33) 739.
 relation to surface and climate in California, (32) 34.
- Floral—
 organs, cytological degeneration in epidermal cells, (39) 734.
 structures of Vitis, variation in, (26) 742.
- Floricultural—
 fairs and exhibitions in United States, (28) 796.
 instruction in United States, (31) 897; (35) 591.
- Floriculture—
 courses in, (35) 499.
 experiments, (39) 542.
 in vicinity of Dresden, (32) 232.
 manual, (34) 836.
 review of investigations, (36) 539.
 science in, (37) 240.
 textbook, (33) 899.
- Florida—
 Everglades, drainage, (33) 585.
 National Forest, administration, (31) 744.
 red scale, notes, (28) 854; (33) 555; (34) 60.
 Station—
 financial statement, (27) 396; (29) 299.
 notes, (26) 395; (27) 696; (29) 396; (32) 797; (33) 399; (35) 397; (36) 98; (37) 196; (40) 495, 600, 798.

Florida—Continued.

Station—Continued.

report, (27) 396; (29) 299; (31) 794; (33) 96;
(35) 898; (37) 699; (39) 499.

University, notes, (27) 696; (29) 396; (33) 399; (35)
397; (36) 98; (40) 798.

Flour—see also Buckwheat, Rice, Wheat, etc.

absorption of moisture by, (37) 362.

acidity in, (26) 661, 866; (32) 855; (33) 64.

acidity in storage, (28) 458.

adapting ferments to, (28) 761.

addition of calcium chlorid to, (31) 860.

adulteration, (26) 710; (29) 61.

adulteration, detection, (28) 411.

amylolytic enzymes, activity, (30) 164.

analyses, (27) 461; (28) 262; 359, 660; (30) 235,
669; (31) 65; (32) 64; (33) 160, 161; (34) 164, 760;
(35) 8.

analyses, interpretation, (37) 617.

and meat, substitutes for, (33) 361.

antineuritic properties after baking, (38) 481.

as affected by age, (27) 363.

as affected by heat fumigation, (29) 253.

availability of nitrogen in, (27) 723.

bacterial content, (31) 855.

baking quality, (37) 861; (38) 663; (40) 762.

baking quality as affected by—

aging, (26) 462.

bran extracts, (30) 363.

composition, (29) 864.

mill fumigants, (26) 357.

phosphorus content, (30) 362.

baking quality—

factors affecting, (26) 356.

in relation to bacteria, (31) 855.

studies, (27) 166; (30) 555.

baking strength, (34) 803.

baking tests, (27) 462; (29) 564; (31) 258; (32) 252,
761; (33) 160.

barley, analyses, (38) 666.

beetle—

confused, remedies, (27) 258.

notes, (26) 453; (34) 754.

rust-red, notes, (30) 655.

bleached—

analyses, (33) 162.

effect on health, (33) 162.

notes, (30) 559.

use, (32) 456.

bleaching, (26) 358; (31) 162, 658; (32) 855.

bleaching, natural and artificial, (28) 861.

bread making value, (27) 267; (39) 469.

burned, milling and baking tests, (38) 567.

catalase activity, (38) 712.

cereal, as feeds, analyses, (40) 72.

change in weight during storage, (30) 667.

chemical studies, (30) 506.

chemistry of, (26) 357.

color of, (31) 658.

color reaction for examination, (40) 411.

coloring matter of, (28) 861.

components, effect on baking quality, (37) 862.

composition, (26) 358.

composition and bread-making value, relation-
ship, (29) 765.

conservation in United States, (38) 792.

decline of gluten in, (32) 63.

degree of bolting in relation to nutritive value,
(40) 66, 460, 556, 657.

detection of—

alum in, (27) 504.

foreign substances in, (27) 808.

ustilaginous spores in, (26) 408.

deterioration, (26) 68.

determination of—

acidity in, (33) 14; (40) 13.

cellulose in, (33) 314.

fineness, (38) 314.

indigestible residue, (39) 501, 502.

pentosans in, (39) 205.

smut spores in, (36) 146.

strength and baking qualities, (34) 610.

digestibility, (33) 564.

digestibility as affected by aging, (26) 463.

digestion of, (26) 263.

distribution of nitrogen in, (36) 269.

effect of modifying gluten surrounding, (28) 359.

enzym, studies, (28) 862.

examination, (39) 205.

exports from Russia, (26) 190.

Flour—Continued.

factors affecting protein content, (33) 161.

feeding, analyses, (32) 465, 667; (34) 665; (36) 65,
167.

fermentation losses in, (34) 660.

from different grains, compounding, (32) 559.

Egyptian wheats, (36) 159.

Hawaiian products, (39) 208.

Italian hard wheat, analyses, (32) 252.

sugar beets, manufacture and use, (29) 161.

western Canada, baking qualities, (34) 365.

wheat of different test weights, (39) 871.

fumigation, (39) 558.

gluten content, (30) 164; (33) 659.

gluten content, diminishing, (31) 855; (32) 252.

gluten, examination, (26) 867.

graham, studies, (29) 160, 866.

hard winter wheat, for bread, (26) 67, 68.

hog, analyses, (31) 863.

Hungarian wheat, baking tests, (26) 562.

improvement in storage, (28) 660.

improvers, notes, (26) 358.

improvers, studies, (28) 65.

insects affecting, (39) 463; (40) 855.

judging, (29) 60; (31) 809; (38) 711, 712.

loss due to fermentation, (36) 464.

low-grade, analyses, (27) 570; (28) 465; (30) 169,
868; (32) 169; (34) 72; (36) 268; (38) 369, 665;
(39) 167; (40) 72.

methods of analysis, (26) 357; (27) 462, 498, 808,
(28) 359; (32) 505.

Mexican, composition and quality, (32) 63.

middlings, analyses, (27) 170; (33) 568.

mill and gristmill industry in United States,
(30) 791.

mill industry in United States, (31) 65.

milling, (38) 538.

milling—

and baking tests, (34) 558.

orders in Great Britain, (36) 662.

treatise, (29) 263.

mills, fumigation, (27) 258.

mites, studies, (40) 855.

mixed and long-extraction, (39) 769.

mixtures, methods of analysis, (37) 10.

moisture content, determination, (39) 715.

moth, Mediterranean, see Mediterranean flour
moth.

moth, remedies, (39) 861.

nitrogen and phosphoric acid in, (26) 661; (27)
500.

nutritive value, (26) 260; (35) 368.

nutritive value—

as affected by milling, (36) 464.

in relation to phosphorus content, (35) 162.

of Queensland, analyses, (40) 314.

of wheat, composition, (33) 564.

paste, use against red spiders, (28) 759.

paste, use in lime-sulphur mixtures, (29) 459.

phosphorus in, (26) 260; (27) 461.

poisonous, (38) 712.

production, problems in, (28) 564.

protein cleavage in, (35) 265.

protein content, (27) 807.

quality, determination, (37) 206.

quality of gliadin in, (27) 112.

red dog, analyses, (26) 568, 665; (27) 170, 171, 670,
774; (28) 464, 465, 669; (29) 367, 467, 769; (31)
73, 467, 564, 663; (32) 169, 862; (33) 568; (34)
168, 263, 371, 467; (35) 373, 562, 867; (36) 667;
(37) 268, 471; (38) 67, 572, 665; (39) 167, 370; (40)
72, 470, 571.

shrinkage tests, (35) 471.

soft wheat, bread from, (27) 867.

standards in Great Britain, (36) 662.

storage experiments, (33) 161.

strength of, (26) 358; (40) 761.

"strong" and "weak," hydration capacity, (39)
468.

studies, (26) 738; (27) 763; (28) 65.

substitutes, (37) 895.

sulphates and lime in, (32) 855.

supply in United States, (38) 867.

sweepings, analyses, (32) 862.

testing, (26) 357; (31) 759.

testing laboratory, constant-temperature cab-
inet for, (36) 714.

three centuries of prices, (40) 792.

toxicity due to barium carbonate, (33) 64.

trade in Fochow District, (40) 863.

Flour—Continued.

- unbolted, detection in bread, (34) 113.
- valuation, (29) 460.
- valuation on dry matter content, (36) 92.
- valuation, score card system, (33) 864.
- variation in—
 - protein content, (26) 259.
 - weight during storage, (32) 763.
- waste, analyses, (39) 773.
- white, ash constituents, (39) 365.
- white, relation to beriberi, (27) 868.
- whole wheat, nutritive value, (40) 66, 67, 460.
- whole wheat, recipes, (40) 67.

Flower—

- bug, insidious, notes, (32) 654.
 - color—
 - and insects, relationship, (31) 57.
 - formation, (32) 524.
 - in *Antirrhinum majus*, studies, (31) 224.
 - Mendelian factors for, (34) 335.
 - review of investigations, (34) 824.
 - studies, (31) 324.
 - diseases, notes, (30) 746; (31) 746.
 - garden calendar for Bermuda, (39) 846.
 - garden contests for boys and girls, (28) 194.
 - gardening—
 - bibliography, (30) 238; (34) 238.
 - notes, (30) 645, 696; (31) 298; (39) 244, 846.
 - treatise, (29) 239.
 - gardens—
 - bibliography, (32) 839.
 - for little girls, (38) 297.
 - handbook, (27) 442.
 - school, in India, (36) 395.
 - treatise, (33) 738; (35) 745.
 - petals, premature fall, (27) 230.
 - pigments—
 - formation, (35) 333.
 - notes, (31) 728.
 - of *Antirrhinum majus*, (32) 202, 203, 220.
 - review of literature, (34) 335.
 - pots, concrete, construction, (27) 645.
 - seed, production, (33) 226.
 - seeds, analyses, (26) 739.
 - shows, notes, (35) 450.
 - structure and color, investigation, (32) 522.
 - thrips—
 - affecting peaches, (33) 746; (40) 650.
 - internal parasite of, (26) 858.
 - notes, (26) 452; (28) 654; (33) 746; (35) 656.
 - remedies, (26) 452; (27) 757; (29) 251.
 - studies, (35) 852; (37) 659.
- Flowering plants—see also Plants, ornamental.**
inheritance of germinal peculiarities, (40) 131.
- Flowers—**
Alpine, treatise, (26) 139.
as affected by—
 illuminating gas, (37) 726.
 tarring roads, (27) 333.
 ultraviolet rays, (26) 431.
biology and coloration, (28) 226.
breeding experiments, (35) 444; (38) 641.
certificated by Royal Horticultural Society, (31) 340.
color and markings, (28) 227.
color and structure in relation to sunlight, (34) 237.
coloring matters of, (32) 309.
cultivated, injury by bees, (38) 264.
culture, (29) 840; (31) 635.
culture—
 experiments, (32) 438; (35) 444; (38) 641.
 in Alabama, (35) 141.
 in Alaska, (29) 743.
 in California, treatise, (33) 441.
 indoors, (32) 839.
cut, deterioration, (28) 129.
cut, industry in Italy, (39) 244.
cut, preservation, (31) 837.
defertilization by insects, (39) 734.
double, breeding, (30) 330.
double, inheritance of, (29) 341.
effect on formation of sugar, (28) 225.
fertilization by bees, (30) 454.
forcing during winter, (33) 521.
formation of anthocyanin in, (31) 427.
French commerce in, (31) 596.
greenhouse culture, (38) 39.
greenhouse, red spider on, (39) 65.
growth as affected by electric light, (28) 228.

Flowers—Continued.

- house, handbook, (26) 744.
 - identification, (31) 35.
 - in California, treatise, (31) 837.
 - inheritance of doubleness, (39) 123.
 - insects affecting, (28) 248; (30) 53.
 - Japanese, inheritance in, (33) 242.
 - lessons on, (31) 792.
 - medicinal, notes, (30) 145.
 - monographic studies, (37) 239.
 - nectar secretion, (37) 633.
 - new or little known, at Ontario Agricultural College, (35) 345.
 - new or noteworthy, tests, (37) 143.
 - night-blooming, self-warming in, (36) 226.
 - of North America, (33) 437.
 - sulphur, mixing with lime, (34) 51.
 - the woods, treatise, (33) 541.
 - western United States, guide, (33) 842; (38) 732.
 - oxidases in, (29) 220.
 - peloria in, (34) 823.
 - pigmentation in, (29) 421, 434.
 - polymorphism in, (28) 540.
 - pressing, (34) 237.
 - relation to insects, (26) 392.
 - seed production, (31) 524.
 - treatise, (30) 238, 445; (31) 143; (34) 535; (37) 145, 746.
 - variations in coloring matter, (34) 710.
 - varieties, (37) 836; (38) 641, 842.
 - varieties at Wisley, (33) 536.
 - wild, treatise, (35) 450; (37) 630.
- Flue dust—**
analyses, (35) 127, 128; (38) 424.
as source of potash, (37) 427; (39) 118, 121, 430, 626.
composition, (34) 623.
effect on vegetation, (26) 38.
fertilizing value, (39) 429.
from iron works, analyses, (33) 821.
from sawmills, analyses and use, (33) 819.
- Flueggea obovata**, analyses and digestibility, (27) 871; (32) 167.
- Fluids—**
determination of turbidity, (37) 14.
determining refraction of, (33) 315.
motion of, (33) 321.
revolving, dynamics, (38) 210.
- Flukes affecting sheep in Algeria**, (31) 86.
- Flume**, Venturi, description and tests, (37) 282.
- Flumes—**
frictional resistance in, (30) 885.
metal, for irrigation canals, (30) 588.
metal, preservatives for (36) 585.
semicircular steel, discharge capacity, (31) 89.
use in lumbering operations, (31) 485.
wooden, design and construction, (36) 586.
- Fluorescein**, action of, (28) 880.
- Fluoric acid**, preservation of fruit juices with, (26) 68.
- Fluorids—**
as wood preservatives, (27) 148; (30) 239.
detection, (26) 311; (27) 206.
- Fluorin—**
detection and distribution in animal and vegetable tissues, (28) 506.
determination, (28) 311; (32) 710.
determination in presence of phosphorus, (38) 313.
effect on—
 corn, (33) 522.
 hemp, (33) 432.
 microorganisms, (32) 308.
 vegetation, (33) 522; (34) 624.
- Fluorspar—**
effect on solubility of basic slag, (35) 204.
slag, fertilizing value, (39) 520.
- Fluosilicates—**
detection, (26) 311.
manufacture and use, (33) 425.
- Flycatchers**, feeding habits, (28) 56.
- Flytrap**, description, (27) 757.
- Flytraps**, notes, (35) 466.
- Foals—**
care and management, (29) 873.
draft, feeding experiments, (31) 870.
infectious disease, (39) 686.
- Foaming**, inhibition, (39) 503.

Fodder—

- crops, *see* Forage crops.
- inorganic, preparation, (34) 72.
- insects affecting, (34) 651.

Fodders—

- amylolytic activity, (32) 503.
- analyses, (32) 465.
- ether and chloroform extracts of, (28) 69.
- ether extract of, (27) 500; (28) 108.
- of South India, analyses, (38) 368.

Fog—

- along California coast, (38) 511.
- annual hours of, (35) 115.
- as source of water supply, (35) 619.
- at United States lighthouses, (38) 511.
- beach, and fracto-cumulus, (34) 118.
- classification, (35) 115.
- effect on redwood, (38) 522.
- forecasting, (35) 808.
- in Manchester, England, (34) 414.
- prevention, (31) 213.
- production by the sun, (29) 721.
- relation to—
 - atmospheric humidity, (29) 120.
 - grape downy mildew, (28) 448.
 - spread of plant diseases, (38) 47.
 - wind direction, (35) 619.
- signal machinery, acoustic efficiency, (38) 510.
- signals, reflection, (26) 214.

Foliage illumination as affected by air movements, (33) 826.

Fomes—

- applanatus, studies, (40) 160.
- australis, notes, (38) 548; (39) 752.
- australis, studies, (40) 48.
- formetarius on apples, (32) 51.
- geotropus, notes, (31) 349.
- igniarius—
 - in black knot cankers, (32) 52.
 - on alder, (40) 844.
 - pomaceus, fruiting forms, (32) 341.
 - sporophores of, (33) 552.
- juniperinus in British East Africa, (34) 546.
- lignosus, notes, (38) 52, 53.
- lucidus, notes, (28) 149; (29) 446; (31) 56; (34) 50; (36) 348; (38) 354; (40) 48.
- lucidus on tea roots, (37) 52, 252.
- officinalis, studies, (40) 160.
- pinicola, notes, (31) 646.
- pinicola, treatment, (38) 855.
- putearius n.sp., description, (31) 247.
- rimosus, notes, (31) 751.
- roseus, studies, (40) 350.
- semitostus—
 - description, (30) 850.
 - host plants of, (28) 350.
 - in tropical America, (34) 442.
 - notes, (27) 451, 854; (28) 153, 241; (29) 547, 749; (31) 242; (32) 549; (33) 449, 741; (34) 57, 744; (35) 251; (36) 746, 846, 851, 852; (37) 349, 839; (39) 452.
 - treatment, (29) 552.
- sp. on tea roots, (39) 57.
- spp., descriptions, (30) 151.
- spp., new hosts for, (33) 550.
- spp., notes, (27) 253, 653; (31) 845.
- spp., on forest trees, (37) 756; (40) 349.
- spp., toxicity of preservatives on, (33) 651.

Fomitiporia—

- tsugina, notes, (39) 153.
- weirii n.sp., description, (31) 247.

Fontaria gracilis, notes, (26) 553.

Food—*see also* Diet.

accessories—

- importance of, (30) 567.
- notes, (29) 463; (37) 468.
- treatise, (29) 265.
- administration in New York, (39) 688, 872.
- adulteration, (26) 564; (27) 206, 497; (28) 259, 762; (31) 462.
- adulteration—
 - detection, (26) 157, 312; (31) 557.
 - detection and prevention, (26) 564, 608.
 - treatise, (26) 65, 355; (40) 459.
- alum in, (31) 556.
- analysis—
 - handbook, (30) 710.
 - international conference, (26) 804.

Food—Continued.

analysis—continued.

- methods, (27) 206; (29) 412, 861; (30) 201; (31) 806; (32) 312; (36) 414.
- quantitative sublimation in, (35) 504.
- textbook, (33) 206; (37) 503.
- treatise, (29) 506; (34) 506, 610.
- and Drugs Act, (31) 396.
- Drugs Act and decisions, (32) 254.
- health, textbook, (36) 497.
- household management, textbook, (31) 298.
- and nutrition—
 - chemistry of, treatise, (38) 661.
 - handbook, (30) 63.
 - papers on, (40) 864.
- and the war, textbooks, (40) 795, 899.
- as body fuel, (30) 563.
- as factor in sociologic problems, (30) 166.
- bacteriological examination, (32) 311; (34) 713.
- bacteriological examination, treatise, (38) 11.
- bacteriology of, (29) 563.
- boric acid in, (36) 466.
- borne infections, (39) 368, 488.
- budgets, (40) 173, 462.
- buying, (38) 366.
- canteens and catering for munition workers in England, (39) 568.
- care of in the home, (31) 299, 359.
- chart, description, (38) 64.
- charts, (29) 766; (31) 260, 557; (40) 68, 559, 865.
- chemistry—
 - bacteriology, and technology, textbook, (32) 558.
 - manual, (29) 598.
 - progress in, (26) 405; (27) 310; (28) 806; (29) 412, 506; (30) 314; (32) 109; (33) 258, 805; (34) 658.
 - treatise, (32) 854.
- clinic, notes, (30) 167.
- codex of Netherlands, (27) 207.
- coloring substances, separation and identification, (36) 714.
- colors, chemical and physical properties, (26) 506.
- colors effect on digestion, (26) 68.
- combination, errors in, (36) 663.
- combinations in menus, (28) 762.
- congress at Liège, (32) 662, 760.
- conservation, (28) 563; (38) 94, 167, 266, 662, 770, 795; (39) 195; (40) 173, 559, 894.
- conservation, menus, (40) 559.
- conservation, teaching, (40) 197.
- constituents, inorganic, behavior in intestinal tract, (28) 665.
- constituents, value of, (31) 263.
- consumption, variations in different seasons, (31) 661.
- containers—
 - absorption by, (32) 763.
 - hygiene of, (35) 765.
 - paper, bacteriology, (32) 856.
- contamination—
 - and protection, (31) 68.
 - in restaurants, (35) 664.
 - with shellac, (26) 710.
- Control Act, Federal, (38) 399; (39) 872.
- control—
 - in Canada, (39) 688.
 - France, (39) 569.
 - Great Britain, (39) 569.
 - United States, (39) 569.
 - work, organizing for, (28) 863.
- cooked, agencies for sale of, (39) 769.
- cooked and uncooked, effects, (27) 461.
- customs of the Armenians, (39) 164.
- customs of the Iroquois, (39) 67.
- definitions and standards, (34) 661.
- desire for, (37) 166.
- digest of data, (37) 469, 571.
- dissemination of typhoid fever by, (31) 68.
- distribution in cities, (33) 694.
- economics at Minnesota College, (37) 264.
- economy—
 - during war, (33) 864.
 - in, (37) 166, 571.
 - lessons in, (40) 693.
 - of table d'hôte meals, (39) 67.
 - treatise, (40) 361, 559, 796.
- elements, component parts of, (35) 368.
- energy, conservation, (39) 768.

Food—Continued.

- extracts, composition, (36) 663.
- extracts, concentrated, cold storage, (27) 461.
- factories, inspection, (26) 868; (31) 359.
- fat, passage into milk fat, (35) 775.
- fat-producing, use against tuberculosis, (33) 278.
- fats, effect on body fat of carp, (27) 66.
- fats, effect on liver, (27) 66.
- flavors, importance of, (32) 764.
- for diabetics, (40) 284.
- growing children, (33) 364.
- hotels, sanitary control, (36) 561.
- polar explorers, (32) 857.
- United States Navy, (33) 753.
- working class households, (27) 269.
- general discussion with recipes, (38) 867.
- heated, nutritive value, (37) 467.
- household economy, (39) 267, 367, 567.
- household tests for, (31) 462, 557.
- hydrolyzed, effect on digestive tract, (29) 662.
- imports and exports of various countries, (32) 455.
- imports into United Kingdom, (26) 688.
- in state institutions of Illinois, (28) 167.
- in the home and market, treatise, (31) 68.
- in war time, book, (38) 662.
- industries, textbook, (32) 658.
- industry, control, (36) 663.
- infection by pathogenic bacteria, (35) 264.
- ingestion—
 - and energy transformations, (40) 270.
 - effect on gaseous exchange and energy metabolism, (26) 565.
 - effect on metabolism, (30) 168, 365.
- inspection—
 - and analysis, treatise, (29) 204.
 - decisions, (26) 762; (27) 269, 566, 665, 868; (28) 662; (29) 566.
- encyclopedia, (28) 259.
- in Alabama, (33) 66.
- Belgium, (27) 14.
- Boston, (31) 659.
- California, (30) 558.
- Canada, (28) 259; (33) 165.
- Connecticut, (26) 659; (28) 357; (30) 664; (33) 363; (34) 458; (35) 558; (37) 863; (39) 366.
- Dresden, (32) 162.
- Florida, (26) 69, 660; (27) 463; (29) 567, 766; (31) 358; (33) 66, 164; (34) 762; (36) 467, 864.
- France, (35) 765.
- Georgia, (26) 660; (31) 358; (32) 763.
- Germany, (26) 261.
- Great Britain, (35) 663.
- Holland, (30) 258.
- Idaho, (29) 866.
- Illinois, (28) 762; (33) 66, 67; (36) 467.
- Indiana, (28) 65; (31) 67; (32) 254, 357; (34) 861; (37) 63.
- Iowa, (32) 65; (33) 164; (36) 762.
- Kentucky, (26) 69; (31) 358, 359; (34) 761; (38) 867.
- Louisiana, (32) 357; (35) 663; (40) 461.
- Maine, (26) 868; (27) 665; (32) 856; (36) 467.
- Maryland, (37) 468.
- Massachusetts, (28) 565; (31) 67; (33) 260; (35) 470; (37) 165.
- Michigan, (26) 660; (27) 767; (29) 463; (33) 363; (35) 367.
- Minnesota, (29) 463; (35) 368; (37) 166.
- Missouri, (26) 564; (29) 362; (31) 67, 462; (33) 164; (37) 63.
- Montana, (33) 67.
- Nevada, (29) 266; (33) 661.
- New Hampshire, (28) 862; (31) 760; (40) 461.
- New Jersey, (28) 862; (32) 357; (35) 164.
- North Carolina, (26) 69; (29) 266; (31) 659; (33) 164; (34) 661.
- North Dakota, (26) 69, 461, 462; (27) 64, 165, 364, 463; (28) 259, 660, 762, 862; (29) 661, 865; (30) 665, 666, 667, 668; (31) 657; (32) 162, 456, 661, 763; (33) 67, 164, 461, 753; (34) 67, 256, 366, 661; (35) 267, 470, 765; (36) 262, 362, 762; (37) 63, 468, 570, 863; (38) 167, 867.
- Ohio, (26) 69; (27) 64; (29) 266; (33) 67, 164, 661.
- Oregon, (35) 470.

Food—Continued.

- inspection—continued.
- in Pennsylvania, (27) 767; (29) 867; (30) 763; (31) 258, 760; (32) 763; (33) 67; (35) 470; (37) 570.
- Philadelphia, (36) 63, 64.
- Philippines, (31) 259.
- Prussia, (31) 857.
- Rhode Island, (31) 258; (33) 67; (36) 762; (40) 559.
- Saxony, (32) 689.
- South Carolina, (31) 259.
- South Dakota, (27) 64; (28) 661; (31) 359; (33) 67; (35) 471.
- Tennessee, (27) 463; (28) 459; (32) 357; (36) 662.
- Texas, (29) 61.
- Utah, (33) 164.
- Virginia, (28) 566; (29) 567, 766; (30) 258; (31) 462; (32) 661; (36) 63.
- Washington, (29) 266.
- Wisconsin, (29) 61; (35) 471; (38) 867.
- Wyoming, (36) 363.
- scientific standards for, (30) 258.
- inspectors—
 - examinations in England, book, (33) 261.
 - handbook, (33) 67.
- instruction, cards for, (32) 495.
- intake, effect on metabolism, (26) 160.
- iodin content, (35) 555, 761.
- laboratories—
 - arrangement, (28) 863.
 - of Austria-Hungary, report, (28) 414.
- laboratory course in, (32) 494.
- laboratory manual, (26) 396; (27) 94.
- law in—
 - Connecticut, (27) 767; (31) 259; (35) 367, 55.
 - Florida, (26) 157; (31) 259; (33) 164.
 - Germany, (30) 559.
 - Great Britain and Ireland, (28) 459.
 - Illinois, (29) 61.
 - Indiana, (26) 868.
 - Iowa, (26) 261.
 - Kansas, (28) 662.
 - Louisiana, (29) 566.
 - Michigan, (26) 660; (29) 61; (37) 63.
 - Minnesota, (30) 877.
 - Nebraska, (30) 868; (31) 67.
 - Nevada, (30) 165.
 - New Hampshire, (28) 862; (40) 462.
 - North Dakota, (33) 662.
 - Ohio, (33) 261.
 - Oregon, (35) 471.
 - Pennsylvania, (27) 767; (30) 763.
 - Rhode Island, (37) 570.
 - South Dakota, (29) 566; (36) 63.
 - Tennessee, (32) 357.
 - Texas, (26) 868.
 - United States, (36) 663.
 - United States, results of, (28) 357.
 - Wisconsin, (30) 165; (40) 462.
 - Wyoming, (27) 767; (31) 259; (35) 663.
- laws—
 - and regulations in Kansas, (32) 254.
 - and regulations in United States, (33) 662.
 - in American cities and towns, (26) 359.
 - in California, (37) 63.
 - in Canada, (26) 762.
 - manual, (32) 65.
 - treatise, (29) 266.
- likes and dislikes of various peoples, (40) 656.
- marketing in New York, (38) 293.
- materials—
 - and condiments, manual, (30) 763.
 - exposed, danger from, (26) 464.
 - Florida, menus and recipes, (40) 560.
 - use of antiseptics in, (26) 564.
- Ministry of Great Britain, work of, (40) 865.
- mixed, effect on digestion of each, (32) 760.
- mixtures, effect on metabolism, (28) 867.
- mixtures, fat-free, tests, (28) 863.
- molds, relation to cockroaches, (26) 347.
- nitrogenous, metabolism, (32) 359.
- of ancient Egyptians, (30) 559.
- Belgian Kongo natives, (31) 557.
- German laborers, (28) 66.
- infants, methods of analysis, (31) 114.
- infants, use of starch in, (28) 359.
- Labrador Eskimo, (37) 264.

Food—Continued.

- of natives of Mailu, British New Guinea, (36) 363.
- poor families in England and Scotland, (29) 567.
- Syrians, (27) 665.
- oils and fats, (39) 366.
- packages, labeling, (35) 558.
- pastes, analyses and use, (27) 664.
- plant of the Aztecs, (40) 728.
- plants of ancient America, (38) 167.
- plants of New Mexico, (28) 860.
- poisoning—
 - bacilli, growth in meat, (32) 559.
 - bacteria, notes, (29) 64.
 - digest of data, (30) 167.
 - due to cream cakes, (31) 555.
 - due to creamed cabbage, (31) 855.
 - epidemic, investigations, (34) 563.
 - from Gaertner-group organisms, (40) 362.
 - in Alaska, (31) 360.
 - in German Army, (31) 857.
 - in Great Britain, (35) 663.
 - microbial, notes, (26) 372.
 - outbreaks, Gaertner-caused, (39) 488.
 - relation to fowl typhoid bacillus, (32) 478.
 - studies, (28) 677.
- policy, national, (39) 190.
- prenatal, summary of data, (31) 463.
- preparation, (28) 566; (30) 463; (32) 661; (37) 670; (38) 663.
- preparation—
 - and preservation, treatise, (26) 65.
 - and service, treatise, (32) 65.
 - and use, (38) 662.
 - in hotels, (32) 357.
 - laboratory guide, (40) 96.
 - storage, and distribution, (32) 255.
- preservation, (26) 355, 372; (27) 269; (29) 312; (35) 471; (40) 18.
- preservation—
 - and adulteration, (35) 765.
 - and care, (32) 659.
 - home and farm, (39) 614.
 - in the home, (28) 694; (30) 165.
 - industry, (40) 808.
 - treatise, (29) 264.
 - with nascent ozone, (29) 566.
- price indexes, (40) 269.
- prices, (26) 261; (28) 388.
- prices—
 - and movement in 1916, (37) 492.
 - as affected by cold storage, (28) 871.
 - during the war, (40) 765.
 - in Australia, (29) 362; (35) 471.
 - Bern, (32) 162.
 - England, (38) 90.
 - France, (33) 694.
 - Great Britain, (35) 471.
 - India, (28) 259; (30) 896.
 - London, (30) 166.
 - New Jersey, (35) 860.
 - New York City, (28) 461.
 - Newton, Massachusetts, (35) 860.
 - 1912, (29) 190.
 - Prussia, (31) 68.
 - United States, (30) 259, 364; (31) 558; (33) 461.
 - Washington State, (35) 765; (38) 568.
 - retail, digest of data, (32) 763.
 - since outbreak of European war, (36) 263.
- primer for the home, (40) 559.
- principles of, (32) 659.
- problem and agricultural situation, (39) 494.
- problem in war time, (36) 263.
- Production Act, Federal, (37) 301; (39) 872.
- production—
 - and conservation by boys and girls' clubs, (38) 795.
 - for 1918, (38) 89.
 - in Brazil, (40) 392.
 - Great Britain, (35) 558, 664, 694; (38) 102, 192.
 - Ireland, (36) 594.
 - Mauritius, (40) 590.
 - Portugal, (38) 99.
 - Scotland, (40) 590.
 - Switzerland, (40) 790.
 - United States, (38) 101, 266.

Food—Continued.

- production—continued.
 - increasing, (37) 594; (38) 298.
 - papers on, (40) 894.
- products—
 - analyses, (30) 763; (32) 65, 162, 357.
 - artificial colors in, (29) 661.
 - canned, inspection, (27) 565.
 - cold storage, (27) 362.
 - coloring, (26) 506.
 - cost of distribution, (29) 492.
 - detecting gums in, (40) 410.
 - determination of starch in, (27) 807.
 - distribution, (29) 894.
 - examination, (26) 69, 462, 660; (27) 165; (28) 565, 566, 862.
 - formic acid in, (28) 863.
 - Hawaiian, use, (28) 660.
 - inspection, (40) 461, 559.
 - inspection in Argentina, (26) 762.
 - inspection law, (38) 366.
 - inspection, regulations, (40) 92.
 - laboratory course in, (35) 93.
 - methods of analysis, (28) 510.
 - pickling experiments, (28) 564.
 - refrigeration, (27) 460; (28) 563.
 - reports of storage holdings, (40) 68.
 - source, chemistry, and use, treatise, (32) 353.
 - stored, insects affecting, (37) 848; (39) 161, 463, 761.
 - Syrian, notes, (32) 455.
 - thickeners used in, (34) 167.
 - toxic materials in, (35) 577.
 - transportation, (32) 76, 686.
 - use of coal-tar colors in, (26) 609.
 - variation in weight and measure, (32) 356; (36) 561.
 - weight and volume of packages, (27) 565; (28) 358.
- proprietary, analyses, (31) 760.
- protection and contamination, (30) 862; (34) 790.
- purchase of a family, weekly, (40) 659.
- purchase, preparation, and service on vessels of U. S. Navy, (31) 166.
- purchasing, (35) 471.
- quantities, effects on human life, (40) 561.
- recipes, (34) 794.
- reforms, modern, treatise, (32) 66.
- regulations in Spain, (26) 69.
- relation to—
 - health, (40) 866.
 - infection, (31) 464.
 - pellagra, (31) 858.
- requirements—
 - and labor, relation, (31) 862.
 - and the menu, (40) 560.
 - appetite, and hunger, treatise, (31) 859.
 - daily, (31) 861.
 - for sustenance and work, (30) 169.
 - of a working-class family, (40) 660.
 - children, (29) 464; (31) 261.
 - infants, (38) 267.
 - man, (28) 200; (35) 99.
 - men in active service, (27) 65.
 - old men, (26) 262.
 - the body, (36) 763.
- resorption, function of psalterium in, (26) 573.
- review of investigations, (34) 762.
- review of literature, (33) 714.
- sampling for inspection purposes, (30) 13.
- sanitary, notes, (27) 665.
- sanitation—
 - on railway trains, (30) 863.
 - treatise, (33) 258.
- saving and sharing, book on, (40) 659.
- selection, (37) 364, 668, 864.
- selection—
 - and preparation, labor-saving devices in, (32) 661.
 - and purchasing, (29) 868.
 - and use, (37) 469.
 - preparation, and cooking, (35) 269. 7
 - treatise, (36) 762.
- served in students' dining room, figures and facts on, (39) 568.
- shops, inspection in Argentina, (26) 762.
- shops, low-priced, in Christiana and Vienna, (32) 856.

Food—Continued.

- situation—
 - in Canada, (40) 68.
 - central Europe, (39) 191, 569.
 - England, (39) 569.
 - Germany, (40) 561, 660, 866.
 - Porto Rico, (39) 190.
 - review, (40) 561.
- standards in Australia, (31) 462.
- standards, notes, (28) 357.
- statistics, handbook, (40) 765.
- statistics, index, (40) 462.
- substances—
 - isolated, dietary value, (37) 264.
 - isolated, experiments with, (31) 69.
 - purified, feeding experiments with, (33) 465.
 - unknown, notes, (31) 362.
- supplies—
 - conservation, bibliography, (31) 535.
 - in railway stations and trains, (32) 456.
 - of large cities in Germany, (30) 364.
 - present and future, (32) 162.
 - statistics, (31) 165.
- supply—
 - and availability, factors, (40) 361.
 - and prices in New South Wales, (29) 862.
 - and prices in war time, (36) 663.
 - bibliography, (36) 762.
 - during European war, (33) 788.
 - economic aspect, (35) 268.
 - future, of United States, (31) 295.
 - in various countries, (38) 494.
 - in war time, (38) 670; (39) 66; (40) 462, 659.
 - increasing, (32) 45; (37) 290, 390, 890.
 - of Belgium, (37) 166.
 - Boston, (36) 593.
 - California, (37) 697.
 - Ceylon, (31) 760.
 - England, treatise, (36) 290.
 - families of limited means, (40) 361.
 - France, (38) 896.
 - France, Government control, (37) 469.
 - Germany, (34) 791; (35) 295; (36) 263; (37) 166; (38) 293.
 - Germany during the war, (33) 462.
 - Germany, treatise, (29) 162.
 - Great Britain, (36) 263, 392, 663; (37) 264, 890; (38) 266, 694; (40) 392, 462, 659.
 - Great Britain in time of war, (34) 89.
 - Great Britain, treatise, (29) 162.
 - Jamaica, (38) 769.
 - large cities, (27) 363.
 - man, relation to plants and animals, (40) 555.
 - New England, (37) 890.
 - New York, (37) 166.
 - Portugal, (37) 890.
 - poor families, (38) 769.
 - Russia, (39) 569.
 - United States, (37) 263, 289, 491; (38) 896.
 - United States Navy, (34) 167.
 - warring European nations, (35) 497.
 - world after the war, (39) 689.
- regulation, (37) 571.
- relation to cold storage, (30) 559.
- relation to population, (34) 594.
- shortage of, (31) 554.
- under war conditions, (36) 290.
- survey in United States, (38) 366.
- surveys, (39) 267, 366, 472, 669, 770, 872; (40) 68, 173, 269, 361, 462, 659, 765, 865.
- tables, booklet, (38) 469.
- tables for use in institutions, (40) 559.
- temperature at ingestion, (31) 462.
- temperature, effect on gaseous metabolism in man, (28) 569.
- terms, notes, (38) 366.
- topics, (40) 559.
- training camps at agricultural fairs, (37) 400.
- utensils, enameled, danger from, (31) 260.
- utilization in cereal diet, (39) 364.
- valuation, (38) 64.
- valuation of dietary components, (36) 61.
- values—
 - education in, (32) 255.
 - per acre of staple farm products, (38) 292.
 - studies, (29) 362.
 - teaching, (40) 96.
 - treatise, (36) 663.
- waste, reducing, (29) 463, 868.
- wastes, causes and remedies, (40) 865.

Foods—

- accessory, effect on gastric secretion, (26) 466.
- acid and base-forming elements in, balance, (26) 158.
- alkalinity of ash, determination, (40) 204.
- aluminized, effect on dogs, (27) 268.
- analyses, (27) 64, 463, 767; (28) 762, 811; (29) 865; (30) 165, 258; (31) 67, 166, 358, 359, 509, 557; (32) 456, 661, 763; (33) 66, 67, 164, 165; (34) 67; (35) 558; (37) 63; (39) 669.
- and diet, textbook, (29) 360.
- and their relative nourishing value, (39) 768.
- antineuritic value as affected by heat and alkalies, (40) 565.
- aromatic substances of, (27) 268.
- artificial and predigested, use, (28) 359.
- artificial coloring, (27) 809; (28) 510.
- as affected by saccharin, (26) 257.
- ash, alkalinity and phosphoric content, (36) 204.
- ash analysis, (29) 861.
- ash constituents, (39) 365.
- Asiatic, calcium and magnesium in, (29) 64.
- bibliography, (29) 360.
- camp, of Southwest Africa, (27) 269.
- canned, *see* Canned foods.
- cereal and vegetable, in United States, (38) 866.
- changes in during cold storage, (27) 460; (31) 659.
- choice of, (35) 765.
- classification, (29) 362.
- cold storage, (27) 362; (39) 472.
- colloid chemistry, (27) 310.
- composition, (31) 760.
- composition and—
 - cost, (38) 366.
 - cost in Spain, (34) 255.
 - energy content, (31) 260.
 - energy value, (34) 561.
 - nutritive value, (29) 463.
- content of purin bases, (40) 205.
- cooperative buying, (29) 868; (31) 261.
- cost—
 - and nutritive value, (28) 762; (30) 364.
 - at Garland School of Home Making, (31) 659.
 - chart, (40) 68.
 - in New York, (33) 565.
 - in various countries, (27) 269.
 - treatise, (40) 68.
- court decisions on, (28) 459; (35) 860.
- creatin- and creatinin-free, studies, (31) 760.
- crumbing, analyses, (31) 358.
- decomposition, (27) 566.
- decomposition, organisms concerned in, (28) 563.
- denaturalized, nutritive value, (28) 66.
- detection of—
 - anthrax bacteria in, (27) 478.
 - benzoic acid in, (27) 715; (28) 411.
 - poisons in, (31) 207.
 - saccharin in, (26) 506.
 - saponin in, (27) 505.
- determination of—
 - arsenic in, (27) 613.
 - phosphoric acid in, (28) 20.
- diabetic, analyses, (29) 660.
- digestibility, (26) 263.
- digestibility as affected by—
 - cooking, (28) 66; (32) 760.
 - preparation, (26) 263.
- digestion and absorption, (28) 801.
- digestion and resorption, (30) 201.
- dipterous larvae in, (26) 558.
- Dominican, analyses, (40) 173.
- drying, (40) 414, 864.
- drying and canning, (38) 94.
- drying in Hawaii, (39) 208.
- dynamic action, (40) 866.
- effect on—
 - amylase content of saliva, (29) 164.
 - composition of urine, (31) 761.
 - elimination of uric acid, (37) 167.
 - heat production in man, (34) 68.
 - metabolism, (33) 753.
 - oxidation rate, (40) 364, 365, 766.
 - secretion of digestive ferments, (32) 256.
 - solubility of uric acid, (27) 464.
 - stomach development of birds, (32) 265.
 - the growing organism, (30) 365.
- examination, (26) 69, 157, 355, 608; (29) 567; (31) 462; (34) 762.
- examination and judgment, progress in, (26) 408.

Foods—Continued.

- exposed, dangers from, (30) 665.
- extra, energy content, (40) 269.
- factors affecting increased cost, (32) 255.
- fresh, enzymic action, (30) 463.
- gastric response to, (40) 269.
- green, vitamins in, (40) 564.
- greening, (27) 868; (28) 662.
- handbook, (28) 163.
- heat of combustion, (26) 872.
- importance of mineral matter in, (29) 366.
- increase in cost of, (26) 359.
- indian, phosphorus content, (27) 461.
- insects affecting, (28) 248.
- left-over, utilization, (38) 770.
- lessons on, (26) 493; (32) 597.
- malated and farinaceous, analyses, (28) 359.
- methyl alcohol in, (40) 204.
- microanalytical methods of examining, (26) 110.
- microbiology of, (26) 372.
- microflora of, (26) 355.
- microscopical examination, (30) 709.
- mineral constituents of, (29) 809.
- miscellaneous, (39) 267.
- monetary value, (31) 262.
- nitrogen-free extracts in, (32) 21.
- nutritive ratio, (29) 362.
- nutritive value as affected by preparation, (30) 364.
- oryzanin in, (28) 168.
- osmotic pressure, (28) 262.
- oven temperatures for, (31) 359.
- perishable, commerce in, (27) 65.
- physiology of, (37) 166.
- preserved handbook, (31) 856.
- preserved, rôle of salt and sugar in, (28) 361.
- prevention of polyneuritis by, (28) 760.
- purin content, (26) 355.
- purity of, (26) 69.
- ready-to-serve, analyses and cost, (33) 753.
- relation to dental decay, (29) 364.
- relation to polyneuritis, (28) 567.
- saccharin in, (31) 557.
- science of, (26) 66.
- specific dynamic action, (30) 365; (32) 359, 562; (33) 755.
- standards for, in Australia, (30) 862.
- sterilized, pulp and paper containers for, (30) 462.
- storage, (26) 261; (39) 472, 770.
- stored, insects affecting, (30) 53; (34) 651; (40) 259.
- studies, (27) 598.
- summer, saving for winter, (39) 718.
- supplemental dietary relationships, (37) 166.
- textbook, (26) 261; (32) 394, 558; (33) 364; (37) 894; (39) 567, 899.
- tissue-forming, (39) 472.
- toxicity of substances found in, (28) 661, 863.
- treatise, (26) 355; (27) 207, 270, 365, 567, 868; (29) 412; (32) 162, 353, 659, 854; (36) 63; (40) 459.
- tropical vegetable, notes, (31) 855.
- uncooked, tubercle bacilli in, (26) 880.
- uniform laws, (28) 762.
- use during war, (34) 561.
- use in Surinam, (28) 761.
- use of saccharin in, (26) 868; (27) 665.
- vegetable—
 - analyses, (29) 659.
 - course in, (26) 597; (34) 899.
 - digestibility, (28) 462; (31) 161.
 - for the diabetic, (39) 571.
 - microscopy of, (35) 503.
 - nutritive value, (31) 161.
 - of German Africa, (29) 59.
- vitamin-free, nitrogen balance with, (36) 159.
- vitamins in, (31) 558.
- war, manual, (37) 715.
- water content, (40) 204.
- water content as affected by cooking, (26) 462.
- wild, of Great Britain, (40) 360.
- world's production of, (35) 497.

Foot-and-mouth disease—

- causative agent, (26) 376, 682; (28) 376; (36) 278.
- control, (34) 781.
- control in—
 - Great Britain, (36) 275, 676; (37) 779.
 - Maryland, (36) 777.
 - Pennsylvania, (37) 577.
 - United States, (35) 74; (36) 675.

Foot-and-mouth disease—Continued.

- diagnosis, (26) 582; (40) 283.
- differentiation from stomatitis, (39) 390.
- dissemination, (27) 284.
- effect on milk, (30) 573; (32) 479; (33) 577.
- effect on milk and butter, (32) 76.
- eradication and treatment, (33) 580.
- etiology, (26) 681; (27) 378.
- historical discussion, (26) 284.
- immunization, (26) 376, 578, 676; (28) 284; (29) 379; (30) 280; (33) 84; (35) 881, 882; (36) 879; (37) 689; (39) 788.
- in cows, effect on milk, (27) 577.
- dogs, (33) 180.
- horses, (27) 379.
- man, (34) 383; (35) 75.
- National Dairy Show cattle, (32) 877.
- sucklings, (26) 582.
- notes, (27) 81, 475; (29) 582; (32) 273, 579, 580, 679, 778; (33) 84, 93, 179; (39) 387.
- outbreak in 1914, (34) 777.
- outbreak in Somerset, England, (37) 878.
- outbreaks in Pennsylvania, (26) 682.
- pathogenesis, (28) 678.
- pathology, (28) 779.
- portable bath for, (28) 181.
- prevalence in—
 - Denmark, (33) 676.
 - Dutch East Indies, (32) 475.
 - England, (32) 271.
 - Europe and South America, (32) 373.
 - Germany, (28) 583; (30) 578; (34) 781.
 - Great Britain, (27) 680; (31) 177; (34) 382; (36) 378.
 - Iowa, (38) 78.
 - Ireland, (29) 677; (31) 480; (34) 186.
 - Mauritius, (40) 680.
 - Netherlands, (27) 379; (38) 79.
 - Prussia, (27) 181.
 - Sweden, (38) 784.
 - United States, (32) 580, 877; (34) 383; (37) 274.
 - Virginia, (37) 479.
 - Washington, (37) 477.
- secondary infection, (33) 180.
- studies, (26) 781; (31) 282, 878; (32) 475, 876; (33) 281; (34) 273, 575, 677, 879; (35) 681; (36) 578.
- transmission to man by milk, (32) 374.
- treatise, (35) 280.
- treatment, (26) 682, 782; (27) 81, 379, 478; (31) 879; (35) 180.
- virulence of blood in, (36) 382; (37) 689.
- virus carriers of, (33) 179.
- virus, destruction in manure, (29) 283.

Foot—

- diseases in horses, treatment, (29) 783.
- evil in horses and mules, (27) 576.
- lesions, treatment with sugar, (37) 82.
- rot in sheep, (33) 774.

Forage crop—

- diseases in Texas, (26) 645.
- diseases, notes, (31) 539, 841; (40) 747.
- mixtures—
 - digestibility, (38) 778.
 - for silage, (26) 666.
 - tests, (27) 234, 736; (28) 532; (34) 735; (37) 733, 734.
- smuts, notes, (35) 348.
- Forage crops—
 - analyses, (30) 565; (31) 863; (33) 171.
 - breeding, (31) 228.
 - breeding experiments, (31) 830; (38) 526.
 - composition at different stages, (39) 836.
 - cost of production, (26) 830; (32) 171.
 - culture, (27) 32, 899; (32) 430; (33) 33, 98, 698; (34) 630; (35) 33; (39) 834.
 - culture—
 - experiments, (26) 632, 830; (27) 438, 638; (28) 735; (29) 224, 631; (30) 228, 828; (32) 532; (33) 227, 333, 526, 667; (34) 34, 228, 736; (35) 826, 829; (36) 32, 133; (37) 329, 831, 435, 826; (38) 31, 433, 526, 632, 735, 828; (39) 229, 632, 835.
 - in India, (39) 229, 230.
 - in Wyoming, (36) 33; (39) 229.
 - under dry farming, (28) 533.
 - determination of yield, (37) 439.
 - development as affected by water, (31) 524.
 - fertilizer experiments, (26) 424, 631; (27) 736; (31) 421; (34) 22; (38) 433.

Forage crops—Continued.

- field tests, accuracy in, (34) 827.
 - field tests in Philippines, (40) 228.
 - for Colorado plains, (34) 630.
 - cotton region, (28) 40.
 - cut-over lands, (39) 230.
 - dry lands, (40) 429.
 - Guam, (40) 327.
 - Oklahoma, (31) 829.
 - pigs, (27) 571; (28) 468; (29) 670; (32) 170; (33) 227, 266; (34) 172; (36) 866, 867; (39) 173, 777.
 - pigs in cotton belt, (31) 169.
 - pigs in Pacific Northwest, (31) 470.
 - pigs under southern conditions, (39) 479.
 - western Kansas, (40) 330.
 - handbook, (29) 530.
 - improvement, (34) 34.
 - in Barbados, (40) 434.
 - Bombay Presidency, (37) 826.
 - Brazil, (40) 625.
 - India, (34) 262; (40) 230, 332, 523, 625.
 - Nebraska, (40) 521.
 - New South Wales, (40) 524.
 - Nigeria, (40) 230.
 - Philippines, (26) 361; (40) 231.
 - Punjab, (27) 669.
 - Queensland, (40) 230.
 - Rhodesia, (40) 230.
 - South Australia, (40) 524.
 - Tahiti, (28) 266.
 - Union of South Africa, (34) 241.
 - introduction, (32) 793.
 - introduction into Philippines, (27) 537.
 - irrigation experiments, (39) 229.
 - laboratory manual, (30) 696; (34) 598.
 - midsummer, (39) 532.
 - native, of Australia, (40) 524.
 - notes, (28) 274.
 - on reclaimed swamp, (40) 231.
 - production, (39) 737.
 - production in New York, (39) 532.
 - residual effects on swine, (36) 266.
 - root systems, (39) 230.
 - rotation experiments, (26) 631.
 - seed production in, (26) 436.
 - seed selection, (36) 638.
 - seeding and harvesting dates, (37) 135.
 - sewage for, (26) 716.
 - temporary, notes, (26) 130.
 - tests, (38) 827.
 - treatise, (28) 632.
 - utilization in Germany, (27) 669.
 - varieties, (27) 438; (28) 828; (29) 222, 830; (34) 736; (37) 533; (38) 31, 333, 431, 433, 632.
 - variety tests, (39) 128, 227, 334, 433, 738; (40) 731, 733.
 - winter, (38) 735.
 - yields, (29) 32.
- Forage—**
- devices for curing, (30) 191.
 - drying artificially, (27) 277.
 - grasses of India, (39) 231, 234.
 - green, preservation, (28) 464.
 - green, production during entire year, (35) 135.
 - moisture content and shrinkage, (34) 827.
 - notes, (30) 197.
 - plants—
 - and their culture, textbook, (32) 827.
 - drought-resisting, analyses, (33) 169.
 - frost injuries, (32) 532.
 - indigenous to Australia, (26) 830.
 - mountain, of central France, (30) 733.
 - of Brazil, (36) 529.
 - German East Africa, (28) 364.
 - German Southwest Africa, (27) 871; (32) 167.
 - Hawaii, (32) 731.
 - Java, (30) 525; (31) 431.
 - Mexico, analyses, (28) 464.
 - Queensland, analyses, (28) 463.
 - Russia, notes, (28) 364.
 - Samara, (37) 168.
 - Sao Paulo, (27) 871.
 - South Africa, analyses, (32) 166.
 - Spain, analyses, (33) 466.
 - Wallowa National Forest, (37) 818.
 - seeding on ranges, (30) 35.
 - varieties, (33) 227.
 - poisoning, *see also* Cattle, Live stock, Range poisoning, and Plants poisonous.

Forage—Continued.

- poisoning, (39) 184, 386, 586, 587, 787, 788, 886.
- poisoning—
 - by wild onion, (40) 577.
 - due to *Bacillus botulinus*, (39) 387.
 - due to *Claviceps paspali*, (34) 676.
 - in California, (40) 778.
 - notes, (30) 685; (39) 387, 891, 892.
 - of horses, (29) 499, 587; (31) 87; (36) 280.
 - horses and mules, (33) 880; (34) 681.
 - horses, cattle, and mules, (28) 378.
 - studies, (28) 886; (35) 76; (36) 580, 581; (37) 179, 689; (38) 383, 384; (39) 680.
 - production on lawns and parks, (36) 439.
 - rations for growing horses, (27) 572.
 - use of wild vegetation for, (40) 665.
 - yields, error in determination, (32) 38.
- Forcipomyia* n. spp., descriptions, (31) 455.
- Forda—**
 - formicaria, morphology and biology, (28) 655.
 - occidentalis, notes, (29) 252.
 - spp., notes, (40) 649.
- Forest—**
 - administration—*see also* Forestry.
 - in Ajmer-Merwara, (27) 245.
 - Andamans, (27) 445; (30) 645.
 - Baden, (26) 49; (29) 239; (30) 743.
 - Baluchistan, (27) 44; (29) 44; (30) 844.
 - Bavaria, (32) 144.
 - British Columbia, (32) 747.
 - Ceylon, (26) 643.
 - Dutch East Indies, (32) 441.
 - German East Africa, (27) 245.
 - India, (26) 340; (27) 147, 543, 647; (28) 343, 344, 643; (29) 149, 239, 342, 444, 643; (30) 347, 645; (31) 240, 537, 641; (32) 237, 340, 640.
 - Oregon, (32) 747.
 - Prussia, (28) 744.
 - Punjab, (27) 245.
 - Queensland, (30) 347; (31) 744.
 - Saxony, (26) 744; (27) 245, 845; (32) 237.
 - South Australia, (26) 643; (28) 643; (30) 447; (32) 747.
 - various colonies, (32) 47.
 - and farm, manual, (26) 391.
 - arboreturns near Brussels, (35) 146.
 - area of New England, changes, (39) 144.
 - assessment and survey in New South Wales, (34) 743.
 - associations of Gulf Coast, (38) 145.
 - book for boy scouts, (35) 897.
 - botany of India, (33) 855; (38) 332.
 - botany, review of literature, (26) 338.
 - boundaries in Kodiak region, Alaska, (31) 537.
 - catalogue of Mexico, (27) 147.
 - climax, of Isle Royale, Lake Superior, (28) 440, 643, 842.
 - conditions in—
 - Baden, (26) 643.
 - Chill, (30) 447.
 - Europe, (33) 442.
 - France, (31) 341.
 - Harz Mountains, (28) 842.
 - Hawaii, (31) 640.
 - Indiana, (27) 542.
 - Louisiana, (31) 240.
 - Mississippi, (32) 840.
 - northwestern Nebraska, (27) 346.
 - Nova Scotia, (28) 343.
 - Ohio, (29) 746.
 - Rocky Mountain forest reserve, (28) 842.
 - the Ozarks, (27) 346.
 - Trent watershed, Ontario, (31) 445.
 - western North Carolina, (26) 842.
 - western United States, (29) 666.
 - Württemberg, (26) 49.
 - conservation—
 - for the South, (40) 841.
 - in southern pine region, (35) 146.
 - relation to forestry education, (40) 393.
 - cover—
 - effect on soil temperature, (31) 415.
 - relation to avalanches, (26) 241.
 - relation to soil formation, (29) 643.
 - Crater National, description, (26) 240.
 - depredations and utilization, (36) 297.
 - devastation, effects, (39) 144.
 - disease surveys, (39) 357.
 - diseases, notes, (31) 343, 746.

Forest—Continued.

- distribution in San Juan Islands, (29) 643.
- ecological studies in northern Ontario, (29) 342.
- ecology—
 - history of, (35) 841.
 - in southern Appalachians, (37) 45.
 - notes, (34) 441.
 - review of investigations, (31) 537.
- economics, public knowledge of, (31) 340.
- entomology in United States, (27) 858.
- erosion, relation to ground litter, (30) 743.
- experiment station—
 - at Cloquet, report, (38) 845.
 - at Meguro, Tokyo, (35) 346.
- experiment stations, administration, (31) 341.
- experiments on heath land, (35) 242.
- exploration in Patagonia, (38) 246.
- fire—
 - control forces, organization, (32) 748.
 - detection, map and panorama for, (40) 640.
 - law in Oregon, (28) 439; (39) 849.
 - legislation in United States, (34) 441.
 - protection in Maine, (40) 45.
 - reports, (39) 352, 451, 547.
- fires—
 - aeroplane patrols for, (35) 147; (40) 641.
 - apparatus for fighting, (36) 448.
 - appraising damage to immature timber, (40) 843.
 - control, (27) 444; (30) 447; (37) 345, 650, 747.
 - control in Michigan, (29) 239.
 - control in Vermont, (29) 643.
 - cooperative control, (30) 239.
- fires, effect on—
 - development of Douglas fir stands, (33) 739.
 - mature timber, (31) 538.
 - standing hardwood timber, (29) 44.
 - trees, (27) 348.
- fires—
 - Eric outlook system, (28) 744.
 - handbook, (39) 352.
 - in Canada, (35) 148; (39) 451, 547.
 - Connecticut, (38) 246.
 - Louisiana, (39) 648.
 - Massachusetts, (27) 444.
 - New Jersey, (35) 542; (39) 547.
 - New York, (26) 744.
 - North Carolina, (26) 142; (30) 239; (33) 144; (34) 642; (40) 248.
 - Oregon, (38) 544.
 - Pennsylvania, (36) 44; (39) 352.
 - Texas, (36) 44; (38) 145.
 - the Tropics, (27) 348.
 - United States in 1915, (36) 448; (38) 317.
 - Vermont, (34) 837; (36) 539.
 - Washington, (34) 837; (36) 645.
- insurance, (36) 448; (37) 888.
- insurance in Germany, (27) 94.
- insurance in Norway, (30) 792.
- light burning as a protection against, (34) 441.
- location by use of clinometer, (33) 739.
- notes, (28) 147; (29) 546.
- prevention, (26) 142, 339; (35) 346, 648.
- prevention and control, (32) 840.
- protection against, (26) 241; (31) 240, 445, 744, 839; (34) 238.
- relation to lightning, (28) 50; (37) 512.
- relation to pine root disease, (27) 854.
- state laws concerning, (29) 239.
- flora of Bengal, treatise, (26) 49.
- flora of New South Wales, (30) 446; (39) 145.
- fungi, altitudinal range, (39) 357.
- grass, new species, (33) 527.
- growth, effect on temperature and humidity of air, (31) 415.
- growth, rôle of light in, (37) 45.
- humus, use in agriculture, (29) 622.
- improvement systems, cost, (35) 451.
- industry conference at San Francisco, 1915, (35) 148.
- industry, organization of finance in, (40) 743.
- insects—
 - imported in United States, (37) 559.
 - in British Columbia, (32) 551; (37) 459.
 - Central Europe, textbook, (32) 151.
 - India, (36) 355; (40) 259, 260.
 - India, treatise, (32) 351.
 - Sweden, (35) 254.
 - notes, (40) 163.

Forest—Continued.

- insects—continued.
 - periodic events, (39) 317.
 - treatise, (27) 554.
- investigations in Dehra Dun, (34) 743.
- lands, State ownership, (38) 849.
- lands, use in common, (33) 893.
- law, British, (39) 450.
- law in—
 - America, (37) 836.
 - Argentina, (37) 747.
 - Massachusetts, (39) 450.
 - Nebraska, (37) 649.
 - New York, (28) 248; (37) 244.
- laws in—
 - Algeria, (35) 42.
 - America prior to March 4, 1789, (35) 42.
 - California, (26) 339.
 - Canada, (39) 547.
 - China, (36) 347.
 - Maine, (35) 346.
 - New Hampshire, (35) 42; (36) 744; (37) 547; (40) 543.
 - North Carolina, (34) 642.
 - Ohio, (29) 746.
 - Pennsylvania, (32) 47; (34) 152, 650.
 - Vermont, (29) 642.
 - Virginia, (39) 144.
 - West Virginia, (26) 854.
- leaves, composition and quantities, (35) 346.
- litter, effect of removing, (27) 845.
- longicorn beetles in Australia, (36) 360.
- lookout stations, map and panorama for, (40) 640.
- management in relation to disease control, (40) 252.
- map of Brazil, (30) 238.
- map of British Columbia, (31) 240.
- mapping, instruments for, (34) 641.
- measurements—
 - exercises in, (33) 298.
 - phototherdolite for, (32) 340.
 - reading and replotting curves, in, (33) 739.
- nurseries—
 - fertilizer experiments, (29) 444; (30) 743; (32) 47.
 - in Wisconsin, (36) 744.
 - seed-bed practices in, (31) 640.
 - starting, (27) 148.
- nursery—
 - planting in Hawaii, (33) 442.
 - soils, fungus flora, (40) 852.
 - stock, distribution, (26) 543.
- parks, notes, (29) 746.
- pathology—
 - in forest regulation, (35) 43.
 - problems in United States, (38) 355.
- physiography, treatise, (26) 338.
- plantation margins, notes, (37) 837.
- plantations—
 - at Axton, New York, (38) 348.
 - effect on prairie flora, (33) 739.
 - establishing, (35) 43.
 - in Massachusetts, (33) 645.
- planting—
 - experimental, in Hawaii, (31) 640.
 - in Arizona and New Mexico, (32) 748.
 - Connecticut, (29) 546.
 - eastern United States, (32) 541.
 - New York, (34) 152; (35) 451.
 - northeastern and lake States, (26) 543.
 - Vermont, (33) 342.
 - Wisconsin, (35) 242.
- methods, (33) 738.
- pamphlet, (40) 542.
- plantings at high altitudes, climatic factors, (39) 810.
- plants, evaporation and transpiration in, (26) 821.
- plat studies, description, (27) 348.
- policy of France, evolution, (33) 541.
- policy, State, (40) 743.
- practices, effect on soil moisture and humus, (29) 343.
- Preserve of New York, (34) 347.
- production, continuous, on private land, (36) 744.
- products—
 - exports, (28) 90.
 - foreign trade in, (34) 194.

Forest—Continued.

- products—continued.
 - imports, (28) 89.
 - imports and exports, (26) 294.
 - in Canada, (35) 347.
 - industries in Canada, (26) 242, 444, 445, 544; (28) 644, 645.
 - industry in United States, (30) 845.
 - international trade in, (28) 790.
 - of British West Africa, handbook, (26) 189.
 - Canada, (29) 843; (30) 46, 744; (32) 841; (34) 48, 348; (37) 245.
 - Canada, statistics, (38) 146, 147.
 - India, (37) 245, 848.
 - India, guide, (27) 541.
 - Quebec, (37) 148.
 - review of investigations, (35) 347.
 - statistics, (40) 154.
 - utilization in Massachusetts, (40) 45.
- protection—
 - against animals, (35) 851.
 - costs and values, (35) 43.
 - handbook, (26) 339.
 - in California, (34) 538.
 - in Canada, (31) 445.
 - notes, (26) 643.
 - papers on, (35) 148.
 - textbook, (35) 648.
 - treatise, (31) 143.
 - trend and practice of, (34) 642.
- provisions of New York State constitution, (35) 42.
- ranger course for Southern Appalachians, (37) 199.
- rangers, handbook for, (36) 446.
- ranges in Württemberg, (26) 643.
- reconnaissance in Philippines and Borneo, (40) 841.
- reconnaissance surveys, cost accounts for, (30) 744.
- reproduction, natural, (38) 145.
- research—
 - after-the-war, (40) 841.
 - in America, correlation, (37) 44.
 - in Europe, (40) 45.
 - Institute, Dehra Dun, report, (26) 444; (28) 344; (30) 645; (36) 539; (38) 543.
 - program, unified, (40) 743.
 - value, (40) 151.
- resources of—
 - Manitoba, (31) 445.
 - Montana, (36) 894.
 - New York, (27) 845.
 - Wisconsin, (26) 141.
- rotations, hewn-tie v. saw-timber, (35) 746.
- schools, intermediate in Austria, (28) 193.
- seed beds, charcoal for, (32) 748.
- seed drill, description, (27) 44.
- seedling and planting, manual, (35) 543.
- seedlings—
 - as affected by shade, (31) 838.
 - board of transplanting, (26) 443.
 - normal growing stock in, (32) 144.
- seeds, effects of environment, (28) 543.
- seeds, preservation experiments, (26) 51.
- Service, *see* United States Department of Agriculture, Forest Service.
- sites, classifying, (39) 50.
- sites, determination, (38) 846.
- societies in elementary schools of France, (31) 97.
- species of western Morocco, (26) 643.
- stands as affected by light and heat, (32) 144.
- stands, mixed, growth behavior, (32) 144.
- statistics in Austria, (29) 444.
- statistics of Alsace Lorraine, (30) 45.
- students, examination in Bavaria, (28) 193.
- succession—
 - and growth in sphagnum bogs, (37) 837.
 - in central Rocky Mountains, (37) 451.
 - studies, (34) 537.
- supervisors, technical education for, (38) 495.
- survey in—
 - New Brunswick Crown Lands, (40) 841.
 - Nova Scotia, (29) 342.
 - Redding, Connecticut, (38) 247.
 - Sumatra, (34) 239.
- surveying, textbook, (26) 644.
- surveys—
 - Abney hand level and chain in, (33) 843.

Forest—Continued.

- surveys—continued
 - in the Cotteswolds and the Forest of Dean, (30) 239.
 - methods, (27) 646.
- taxation—
 - bibliography, (39) 247.
 - in New Jersey, (34) 642.
 - in United States, (38) 543.
 - in Washington, (31) 745; (35) 746.
 - investigations, (27) 646.
- taxation law in—
 - Connecticut, (31) 537; (39) 450.
 - Massachusetts, (33) 242.
 - Vermont, (33) 343.
- tent caterpillar—*see also* Tent caterpillars.
 - injurious to cranberries, (33) 352.
 - notes, (28) 155, 158; (30) 657; (33) 253; (34) 752; (38) 358.
 - remedies, (33) 59.
- tracts, mapping, (37) 651.
- trees, *see* Trees.
- types—
 - in central Rocky Mountains, (30) 743.
 - meteorological factors in, (34) 640.
 - of Germany, (27) 42.
 - seed vitality as factor in determining, (39) 145.
 - symposium on, (31) 639.
 - valuation, textbook, (32) 840.
 - valuation, treatise, (30) 146; (35) 240.
 - vegetation as affected by calcium salts, (32) 728.
 - workers in Sweden, (37) 890.
 - working plan, (31) 341.
 - working plans—
 - history and development, (34) 641.
 - preparation, (32) 46.
 - treatise, (37) 243.
 - yields, relation to climate and soils, (37) 450.
 - zoology, review of literature, (26) 338.
- Forestation—
 - and the partially disabled, (39) 648.
 - as a correction of avalanches, (29) 842.
 - by seeding in Black Hills, (26) 842.
 - effect on rainfall, (31) 415.
 - general principles, (28) 439.
 - in dry lands of Chile, (31) 240.
 - England and Wales, (31) 744.
 - Great Britain, (40) 248.
 - New Zealand, (26) 542; (27) 245.
 - Norway, (38) 544.
 - southern Hungary, (27) 245.
 - Switzerland, (39) 50.
 - the French Vosges, (26) 241.
 - of sand dunes, (26) 543; (38) 348.
 - sand hills of Nebraska and Kansas, (29) 43.
 - school lands in Nebraska, (34) 347.
 - waste lands, (32) 237.
 - studies, (38) 845.
- Forester's diploma of English Arboricultural Society, (28) 795.
- Forester's training, (37) 243.
- Forestiera acuminata, culture for wild ducks, (33) 251.
- Forestry—*see also* Forest administration.
 - American, Australian study of, (39) 450.
 - and community development, (39) 144.
 - and reconstruction, (40) 743.
 - arithmetic for Vermont schools, (33) 495.
 - as a business investment, (35) 452.
 - as a vocation, (27) 845.
 - at National Conservation Congress, (31) 340.
 - at Syracuse University, (28) 496.
 - bibliography, (26) 442, 542; (27) 648; (29) 345; (30) 238; (31) 239; (33) 541.
 - bureau of Philippines, report, (26) 444.
 - continuation course at Heidelberg, (32) 896.
 - controlling soil erosion by, (31) 317.
 - cooperation in, (34) 238.
 - cost accounting system, (32) 748.
 - department of Sweden, report, (26) 340.
 - development, (27) 845.
 - education, (40) 393.
 - education—
 - in Austria, (27) 695.
 - in United States, (33) 493; (36) 96.
 - institutions in Sweden, (36) 690.
 - needs, (27) 596.
 - elementary, lectures on, (33) 49.
 - elementary, treatise, (40) 151.

Forestry—Continued.

- European, notes, (28) 744.
 farm, in Virginia, (39) 546.
 farm, notes, (28) 843; (38) 543.
 field parties, first aid manual, (38) 645.
 financial problems in, (31) 640.
 for high schools, textbook, (33) 298.
 general principles, (28) 439.
 geologic-agronomical maps in, (28) 619.
 handbook, (27) 41; (28) 644; (31) 640.
 importance of light in, (26) 745.
 in agriculture, (27) 393.
 Algeria, (37) 244, 650.
 America, (30) 743; (38) 643.
 Assam, (35) 146.
 Australia, (28) 239; (39) 50, 450; (40) 45.
 Australia and New Zealand, (37) 244.
 Austria, (27) 391; (30) 743.
 Baluchistan, (38) 846.
 British Columbia, (31) 240; (37) 650.
 British Empire, (33) 145.
 California, (30) 599; (33) 144; (36) 744; (40) 744.
 Canada, (26) 744; (28) 543; (30) 44, 45; (33) 442, 738, 843; (34) 238, 641; (35) 43, 147, 347; (37) 45, 244, 650; (38) 246, 349; (39) 144, 451.
 Chaux and Faye de la Montrond, France, (36) 346.
 China, (37) 348.
 colleges and experiment stations, (26) 15.
 Colorado, (38) 643.
 Connecticut, (29) 546; (31) 341; (35) 42.
 Dehra Dun, (30) 645.
 Denmark, (29) 693.
 Dutch East Indies, (30) 697; (34) 239, 743.
 England, (34) 743.
 England and Wales, (31) 744.
 Europe, breeding and selection work in, (34) 536.
 geography, (27) 393.
 Georgia, (36) 790.
 Germany, (30) 239, 399.
 Great Britain, (36) 143; (38) 544.
 Great Britain, government aid to, (28) 595.
 Great Britain, handbook, (27) 646.
 Hawaii, (29) 239; (33) 442; (34) 837; (35) 843; (37) 146, 452; (38) 644; (39) 451.
 Hokushu, Japan, (38) 447.
 India, (33) 145, 344, 443, 541, 644, 843; (34) 46, 239, 441, 837, 838; (35) 242, 543, 843; (36) 346, 448, 843; (37) 45, 146, 244, 348, 547, 650, 747, 838; (38) 144, 247, 543, 845, 846; (39) 245, 547, 648, 848, 849; (40) 343, 640.
 Indiana, (33) 144; (35) 42; (37) 44; (40) 45.
 Ireland, (33) 645; (35) 843.
 Italy, (30) 844; (40) 841.
 Japan, (34) 348; (35) 346.
 Java, (34) 348.
 Kentucky, (38) 543.
 Korea, (38) 349.
 Latin America, (34) 306; (38) 246.
 Louisiana, (28) 146; (39) 450.
 Maine, (28) 743; (37) 243; (40) 45.
 Maryland, (35) 648; (38) 144; (39) 50.
 Massachusetts, (27) 444; (28) 643; (30) 743; (32) 95; (33) 144; (35) 42; (36) 843; (39) 750; (40) 744.
 Michigan, (37) 348.
 Minnesota, (29) 239; (32) 839.
 Montana, (35) 542; (36) 645; (40) 542.
 mountain communities, (36) 242.
 nature study, (26) 193, 392.
 Netherlands Indies, (40) 45.
 New Brunswick, (38) 543; (39) 144.
 New England, treatise, (27) 646.
 New Hampshire, (35) 347; (36) 744; (40) 543.
 New Jersey, (27) 647; (37) 547, 650.
 New South Wales, (26) 141; (28) 51, 439; (34) 838; (35) 346; (40) 640.
 New York, (26) 744; (27) 845; (33) 843; (40) 343.
 New Zealand, (27) 647; (36) 44, 448; (38) 247; (39) 144; (40) 152.
 Newfoundland, (35) 649.
 North Carolina, (38) 543.
 Nyasaland, (34) 743.
 Ohio, (26) 744; (32) 440.
 Ontario, (35) 242; (37) 244.
 Oregon, (28) 439; (32) 237; (35) 542; (38) 544.
 Pacific Northwest, handbook, (26) 49.
 Patagonia, (37) 747.

Forestry—Continued.

- in Pennsylvania, (28) 147; (33) 541; (37) 45; (38) 44; (40) 744.
 Philippines, (28) 439; (30) 447; (33) 843; (34) 306; (36) 44; (37) 836; (38) 45, 246; (39) 648; (40) 152.
 Portugal, (29) 643.
 Prussia, (26) 744; (28) 643; (29) 746; (34) 348.
 Quebec, (34) 239; (39) 451.
 Queensland, (33) 51; (34) 239; (36) 346; (38) 145.
 Rhode Island, (35) 451.
 Rhodesia, (39) 144.
 Russia, (33) 237; (36) 346.
 Russia, relation to "black storms," (38) 145.
 Russia, steppe region, (34) 536.
 Saxony, (29) 746; (32) 47; (34) 743.
 Sierra Leone, (26) 643.
 South Africa, (36) 346; (37) 244.
 South America, (36) 143; (38) 246.
 South Australia, (34) 743; (36) 645; (38) 751; (40) 448.
 southern Appalachians, (33) 738.
 southern Nigeria, (26) 542.
 Sudan, (32) 238.
 Sumatra, (35) 843.
 Sweden, (26) 744; (30) 645; (35) 146, 242; (39) 352, 547.
 Switzerland, (33) 644; (35) 543; (37) 650.
 Tennessee, (26) 812.
 Texas, (37) 348, 747.
 the South, (37) 450.
 Trinidad, (29) 643.
 Trinidad and Tobago, (35) 451.
 Tunis, (31) 492.
 Tunis, Algeria, and Corsica, (37) 650.
 Uganda, (32) 238; (40) 343.
 Union of South Africa, (40) 448.
 United Kingdom, (39) 245.
 United States, (30) 238; (31) 340; (34) 46, 152; (36) 744.
 Vermont, (26) 744; (28) 643; (32) 237; (34) 837; (36) 539.
 Virginia, (35) 748, 842; (39) 144, 546.
 Washington, (36) 645.
 West Virginia, (37) 747.
 Wisconsin, (28) 643; (31) 444; (36) 744.
 Institute at Florence, Italy, (32) 794.
 instruction—
 in Austria, (26) 689, 690; (28) 392; (30) 194; (31) 392; (32) 290; (35) 895.
 Austria and Denmark, (36) 895.
 Austria and Germany, (32) 392.
 England and Wales, (26) 799.
 Europe, (26) 690.
 Italy, (30) 194.
 Latin America, (38) 199.
 Prussia, (30) 793.
 public schools, (30) 394; (39) 92.
 rural schools, (28) 193.
 schools, (31) 792.
 South Australia, (26) 799.
 United States, (34) 308.
 University of Nanking, (32) 699.
 moral and religious training in, (27) 695.
 standardization, (28) 394.
 investigations—
 at Colesborne, (28) 440.
 quadrat method in, (33) 645.
 landscape, lessons on, (36) 897.
 laws, (39) 144, 450, 547, 849.
 laws, handbook, (32) 150.
 laws in Pennsylvania, (27) 355; (32) 47.
 legislation, new, notes, (28) 643.
 lessons in (26) 597; (27) 897.
 literature, classification, (27) 147.
 manual, (32) 46; (38) 751.
 manual for northeastern United States, (39) 50.
 meteorological observations in (31) 614.
 municipal, in New York, (32) 840.
 museum at Kew, (40) 248.
 papers on, (32) 238.
 photogrammetry in, (26) 141.
 place among natural sciences, (32) 237, 810.
 present-day problems, (40) 151.
 primers, (27) 598.
 principles of, (26) 842.
 private, (40) 744.
 problems, Canadian, (40) 743.
 publications in U. S. Department of Agriculture, (28) 147.

Forestry—Continued.

- pursuits, monograph, (40) 898.
- ranger schools, notes, (28) 394.
- review of literature, (26) 338; (27) 845; (30) 44, 238; (33) 49.
- school at Salmeczbanaya, Hungary, (28) 794.
- schools in Bavaria, (35) 695.
- scientific, for Latin America, (40) 248.
- site classification in, (35) 43.
- soil aeration in, (36) 44, 844; (39) 648.
- tables for determining profits, (32) 748.
- teaching by pictures, (26) 193.
- terms, (31) 840; (36) 744.
- textbook, (27) 95; (28) 193; (32) 692; (36) 596.
- theory of errors in, (30) 599.
- treatise, (26) 140, 338, 542; (27) 42, 444; (30) 44, 742; (31) 49; (35) 240, 346, 841; (36) 242.
- yearbook, (34) 494.
- yield tables, (27) 347.

Forests—

- Alpine, management in Bavaria, (29) 842.
- as affected by—
 - light burning, (34) 441.
 - origin of seed, (29) 841; (30) 239; (31) 838.
- as check for avalanches, (26) 241.
- as windbreaks, (29) 842.
- brush disposal in, (34) 441.
- climatic formations in Cape Breton Island, (40) 152.
- close utilization, (36) 539.
- community, development, (40) 744.
- composite type, management, (29) 43.
- coniferous—
 - of eastern North America, (31) 839.
 - reproduction, (39) 750.
 - reproduction in northern New England, (37) 651.
 - thinning experiments, (31) 537.
- conservation, (36) 644.
- conservation—
 - and reconstruction, (40) 743.
 - by private land holders, (28) 842.
 - in British Columbia, (30) 45.
 - in Eastern States, (28) 842.
 - in United States, (26) 842; (36) 96.
- conversion systems, (31) 537.
- county or community working plans, (35) 841.
- culture experiments in Prussia, (33) 641.
- determination of—
 - increment, (30) 347; (35) 452.
 - site qualities, (31) 537.
 - stocking, (31) 538.
- determining normal growing stock in, (35) 748.
- dipterocarp, in Philippines, (33) 443.
- discontinuous light in, (36) 242.
- effect on—
 - climate, (29) 642, 842; (30) 743; (31) 716.
 - climate of Switzerland, (38) 14.
 - conservation of snow, (29) 813, 814; (31) 510, 716.
 - frosts, (27) 816.
 - run-off, (30) 620.
 - stream flow, (29) 642.
 - streams, (27) 348.
 - temperature of air current, (34) 413.
 - water supplies, (33) 587.
- fertilizers for, (28) 843.
- grazing in, (40) 343, 448.
- growth in Natal, (38) 144.
- growth in relation to oxygen content of soil water, (27) 121.
- growth studies, (35) 841.
- Hawaiian, notes, (28) 842.
- high mountain, management, (31) 49.
- hygienic influence, (29) 842.
- injury from coal smoke, (33) 629.
- insects affecting, (26) 553; (27) 452; (28) 159, 352, (30) 657; (32) 448; (34) 251; (35) 356, 851.
- irrigation with sewage water, (33) 343.
- light measurements in, (30) 45.
- miniature model, (30) 196.
- National, (39) 648, 750.
- National—
 - appraising stumpage on, (32) 340.
 - as hunting grounds, (40) 743.
 - conservation of game in, (38) 555.
 - grazing resources, (31) 767; (36) 242.
 - handbook for campers, (34) 46.
 - landscape engineering in, (40) 248.
 - laws applicable to, (34) 837.

Forests—Continued.

- National—Continued.
 - management, (36) 346.
 - manual, (26) 241, 340.
 - nursery practice in, (37) 348.
 - of Arkansas, (27) 443.
 - Eastern United States, (37) 348.
 - Pacific Northwest, working plans, (26) 51.
 - southern Appalachians, influences, (40) 841.
 - United States, (34) 46.
 - planting policy in, (40) 743.
 - range reconnaissance on, (33) 843.
 - recreation uses, (40) 542.
 - reforestation, (33) 645.
 - road building, (37) 547.
 - roads in, (40) 90.
 - sales policy, (29) 444.
 - statistical report, (40) 447.
 - stumpage appraisals, (37) 838.
 - summer homes in, (36) 744.
 - telephone construction in, (34) 191.
 - timber sales, (27) 543; (36) 644.
 - timber surveys, (38) 349.
 - trail construction in, (34) 190.
 - use, (33) 242, 541; (39) 750.
 - volume tables, (37) 450.
 - water supply from, (40) 743.
 - work of Forest Service on, (39) 648.
 - working plans, (31) 341; (34) 441.
 - yield regulation data for, (31) 639.
- natural regeneration in, (29) 842.
 - Nematus injury in, (35) 55.
 - nitrification of soils, (40) 418.
 - northern hardwood, (34) 152.
 - of Alabama, (29) 746; (35) 748; (36) 843.
 - Alaska, (34) 640.
 - Alsace-Lorraine, (26) 744; (40) 248.
 - Atlantic plain, relation to humidity of Central States, (29) 642; (31) 716.
 - Bellinger River, New South Wales, (30) 743.
 - British Columbia, (34) 641.
 - British Guiana, (28) 343.
 - Cape of Good Hope, (28) 239.
 - Chile, (33) 144.
 - Colorado, (37) 209.
 - Crater National Park, (35) 748.
 - East Africa, (40) 152.
 - Eritrea, (26) 643.
 - Florida, (35) 347; (38) 643.
 - France, effect of the war on, (40) 152.
 - Guindos hacienda in Chile, (35) 842.
 - Isthmus of Panama, (38) 544.
 - Japan, (33) 443.
 - Java, (34) 239.
 - Java and Madura, (37) 346.
 - Kongo, (38) 247, 248.
 - Madagascar, (31) 839.
 - Maryland, Anne Arundel Co., (34) 440.
 - Maryland, Prince Georges Co., (29) 441.
 - Massachusetts, Plymouth Co., (39) 450.
 - Massachusetts, Worcester Co., (36) 447.
 - Mesa Verde National Park, (35) 648.
 - Mexico, (35) 242.
 - Montana, economic use, (40) 542.
 - Montana, winterkilling and smelter injury in, (26) 826.
 - Mount Rainier National Park, (35) 451.
 - New South Wales, (30) 743.
 - northern Manitoba, ecological features, (38) 732.
 - northern Russia, (28) 239.
 - Oregon, conservation, (26) 240.
 - Pennsylvania, (36) 843.
 - Philippines, (28) 343; (36) 644; (39) 145.
 - Porto Rico, (32) 697; (36) 243.
 - Prussia, (30) 645.
 - Quebec, (37) 147.
 - Smoky River Valley and Grande-Prairie country, Canada, (34) 538.
 - Switzerland, (30) 346.
 - the Andes, (36) 27.
 - the Far East, handbook, (30) 45.
 - United States, (34) 46.
 - Virginia, (39) 546; (40) 343.
 - western Caucasus, (31) 49.
 - Yosemite, Sequoia, and General Grant National Parks, (35) 242, 648.
 - precipitation-evaporation factor in, (37) 525.

Forests—Continued.

- private, management in New York, (35) 452.
- public, state v. national control, (29) 491.
- rain, in Jamaica, (32) 748.
- regeneration in Austria, (30) 447.
- regeneration in north Sweden, (31) 537.
- relation to—
 - atmospheric and soil moisture, (36) 843; (37) 716.
 - conservation of snow, (27) 617; (28) 414, 514; (36) 17, 143.
 - European war, (38) 643.
 - floods, (31) 515; (32) 237.
 - ground water, (29) 240.
 - hailstorms, (31) 22.
 - rainfall, (36) 346; (38) 510.
 - run-off and stream flow, (28) 643.
 - soil erosion, (37) 520.
 - soil formation, (28) 421.
 - soils, (38) 542.
 - stream flow (26) 51; (33) 885; (36) 346.
 - water supply, (28) 842.
- reproduction as affected by fires, (27) 348.
- second-growth, improvement, (39) 246.
- selection—
 - regulating yield in, (28) 744.
 - strip method of felling, (27) 444; (35) 346.
 - system, (29) 240; (30) 844.
 - system, formula for normal growing stock in, (33) 738.
- site determination and classification, (37) 450.
- smelter injury, (29) 851.
- soil types for, (34) 640.
- State administration, (40) 688.
- State, in Pennsylvania, (35) 452.
- strip thinnings, (26) 51.
- subdivision of, (33) 442.
- sun energy in, (30) 45.
- taxation, (27) 646; (38) 146.
- thinning experiments, (28) 744.
- Tintern crown, management, (33) 645.
- tolerance studies, (40) 152.
- topographic survey methods, (35) 841.
- treatise, (28) 544.
- tropical, timbers of, (39) 245.
- tropical, utilization, (36) 145.
- utilization with portable mills, (34) 642.
- windfall damage in, (34) 640.
- windfall in, (33) 843.
- yield tax, basis for, (38) 46.
- yields, determination, (27) 647; (31) 538.
- Forficula auricularia**—
 - feeding habits, (32) 246.
 - in Rhode Island, (32) 247.
 - life history, (36) 857.
 - life history and remedies, (38) 56.
 - notes, (39) 464; (40) 753.
- Forget-me-not, culture in Alaska, (29) 743.
- Forging and smithing, handbook, (36) 287.
- Forhin**—
 - analyses, (28) 154.
 - tests, (30) 448.
- Forleule, outbreak in northern Bohemia, (31) 756.
- Formaldehyde**—
 - analyses, (33) 735.
 - as blood preservative, (29) 676.
 - fly poison, (37) 53.
 - food preservative, (30) 364.
 - milk preservative, (30) 74; (31) 674.
 - oxidation product of chlorophyll, (31) 222.
 - serum preservative, (33) 280.
 - source of carbon for plants, (33) 821.
 - treatment for seed grain, (28) 846.
 - destruction of flies by, (26) 861.
 - detection, (32) 506.
 - detection in—
 - illuminated green plants, (35) 821.
 - milk, (28) 809; (30) 414; (40) 413.
 - plant leaves, (29) 308.
 - determination, (26) 510; (30) 115; (31) 109; (35) 616.
 - determination in fumigants, (31) 414.
 - disinfection with, (26) 174.
 - effect on—
 - action of maltase, (28) 504.
 - animal organism, (34) 459.
 - bacterial toxins, (26) 782.
 - formation of botulinus toxins, (30) 479.
 - germination of cereals, (29) 151, 346.
 - germination of dodder, (27) 28.

Formaldehyde—Continued.

- effect on—continued.
 - germination of seeds, (26) 131, 820.
 - germination of wheat, (26) 846; (28) 242; (30) 242, 837.
 - living plants, (29) 827.
 - plants, (26) 731.
 - potatoes, (30) 539, 540.
 - protein hydrolysis, (38) 201.
 - soil organisms, (31) 27; (38) 420.
- gas, liberation from water solutions, (33) 12, 111.
- gas, use against flies, (30) 757.
- house disinfection with, (32) 683.
- in Adamkiewicz reaction, (40) 507.
- in sap of green plants, (29) 132.
- method of generating, (39) 649.
- nature and use, (26) 580.
- oxidation to formic acid, (35) 713.
- preserved milk for calves, (32) 669.
- rôle in plant growth, (28) 38.
- solution, effect on potatoes, (27) 748.
- sterilization of soils by, (32) 816.
- sulphurous acid, detection, (32) 507.
- synthesis by sunlight, (30) 129.
- use against—
 - bloat in cattle, (33) 389.
 - Fusarium in cereals, (33) 546.
 - mastitis, (37) 277; (38) 286.
 - potato diseases, (26) 547.
 - potato wart disease, (33) 446.
 - wheat stinking smut, (33) 744.
- use in seed treatment, (39) 851.
- Formalin**, see Formaldehyde.
- Formalinized blood corpuscles**, use in complement fixation test, (30) 779.
- Formamid**, assimilation by plants, (26) 32.
- Formic acid**—
 - as food preservative, (30) 364.
 - as fruit sirup preservative, (29) 463.
 - content of vinegar, (27) 808; (29) 798.
 - detection, (27) 498; (32) 506, 507.
 - detection in—
 - food products, (28) 806; (29) 799.
 - fruit products, (28) 204.
 - meat, (29) 716.
 - sirups, (29) 717.
 - vinegar, (26) 208.
 - determination, (26) 510; (31) 509; (32) 115; (33) 804.
 - determination in—
 - foods (26) 312; (28) 863.
 - preservatives, (32) 299.
 - effect on plants, (37) 224.
 - in honey, (26) 25; (27) 714; (28) 166.
 - in silage, (28) 608, 609.
 - or formates, determination, (38) 313.
 - toxicity to plants, (39) 224.
- Formic aldehyde** as soil disinfectant, (31) 621.
- Formica**—
 - fusca cinerea, injurious to tobacco, (30) 759.
 - montanus, notes, (28) 755.
- Formicencyrtus thoreauini** n.g. and n.sp., description, (35) 761.
- Formicidae**—
 - of Guam, (31) 62.
 - of Italy, (38) 364.
 - of South Africa, (35) 365.
 - studies, (29) 860.
 - type species, (26) 352.
- Formol**, titration, (29) 408.
- Formyl group**, occurrence in lignin, (27) 310.
- Forsythia**—
 - suspensa, leaf variation in, (27) 741.
 - viridissima, sclerosis of, (36) 251.
- Fortunella** n.g. and n.spp., descriptions, (32) 838.
- Fossil ruminant** from Rock Creek, Texas, (34) 264.
- Foul brood**—
 - control, (39) 264, 869.
 - control in Kansas, (37) 357.
 - control in Texas, (36) 758.
 - etiology, (27) 563.
 - European, control, (39) 661.
 - European, in South Africa, (40) 648.
 - in Cuba, (27) 364.
 - in South Africa, (40) 648.
 - law in Texas, (34) 454, 657; (39) 869.
 - notes, (26) 151, 759; (28) 352, 450, 456; (30) 161, 759; (31) 553; (32) 853; (37) 255.
 - recognition and treatment, (38) 264.
 - treatment, (38) 263; (39) 869.

- Foundations, masonry, preventing dampness in, (28) 786.
- Fouquieria splendens*—
density of cell sap, (32) 35.
water content of leaves, (26) 627.
- Fowl**—
cestode, life cycle, (40) 359.
cholera, (40) 183.
cholera—
and fowl typhoid, (40) 685.
bacillus affecting man, (39) 186.
bacterium, opsonic power of serums against, (27) 285.
immune serum, action, (32) 379.
immune serum, protective substances of, (30) 186.
immunization, (26) 676; (37) 78, 83, 183.
notes, (26) 373; (35) 878.
pathological anatomy, (26) 486.
serum therapy of, (26) 578.
studies, (27) 583; (31) 485, 781; (33) 676; (35) 80; (39) 183, 892.
treatment, (30) 286; (36) 79.
diphtheria, relation to fowl pox, (28) 483.
disease in Brazil, (36) 782.
diseases, cholera-like, studies, (26) 185.
diseases, notes, (37) 483.
midge, notes, (36) 359.
mite, tropical, in Australia, (37) 360.
nematode, transmission, (30) 485; (36) 183; (38) 83.
pest, immunization, (36) 879.
pest, notes, (28) 288.
pest, transmission by *Argas persicus*, (26) 890.
pest, virus of, (28) 785.
plague—
in ducks, (36) 782.
in Prussia, (27) 181.
notes, (26) 373.
virus, cultivation, (29) 180.
putrefaction of, (34) 163.
tick, *see* *Argas miniatus*.
- typhoid**—
bacillus, studies, (32) 477, 478.
causative agents, (40) 685.
studies, (35) 283; (37) 82; (38) 788.
testing for, (39) 792.
- Fowls**—*see also* Chickens, Hens, Poultry, etc.
acorns for, (35) 172.
activating resting ovary in, (33) 472.
alcoholized, (39) 177.
alcoholized, progeny, (40) 470.
anatomy, (37) 772; (40) 483.
and pheasants, hybridization experiments, (29) 575.
bare-necked and crested, studies, (28) 673.
blue Andalusian, pigmentation, (39) 877.
bone repair in, (38) 385.
breeding experiments, (26) 669; (32) 767; (37) 369, 869; (39) 376, 781.
breeding for egg production, (29) 472; (32) 172; (38) 172; (39) 781.
Campine—
and Braekel, characteristics, (27) 72.
notes, (30) 271.
treatise, (33) 273.
chromosomes of, studies, (40) 276.
correlation of weight and egg production, (27) 276.
cost of feeding, (37) 871.
crooked-breasted, (27) 573; (32) 772.
crossbreeding experiments, (32) 868.
crossing experiments, (32) 172.
crossing with pheasants, (27) 573.
crossing-over in sex chromosome, (37) 868.
domestic, castration, (33) 573.
domestic, origin, (26) 669; (31) 871.
eating of alfalfa caterpillar by, (32) 58.
ectoparasites of, (28) 888.
effect of age on fecundity, (38) 372.
effect of castration on erectile organs, (38) 170.
egg characteristics of, (31) 569.
egg-laying cycles, (37) 869.
egg-laying cycles as basis for selection, (38) 172.
egg production and yellow pigment in, correlation, (33) 172.
eggshell color, (39) 781.
energy metabolism of, (33) 472.
factors affecting sex ratio, (37) 868.
fat content of tubercles, (28) 785.
- Fowls—Continued.**
fat deposition in testes, (28) 470.
fecundity in, (32) 76; (34) 870.
fecundity in, inheritance, (28) 576, 577; (33) 471; (39) 781.
formation of silky and woolly feathers in, (28) 577.
germ cells as affected by poisons, (37) 370.
germ cells, experimental modification, (39) 177.
gonadectomy and secondary sex characters, (38) 170.
gonocytes and ovaries, studies, (29) 874.
growing, as affected by calcium salts, (39) 177.
healthy and sick, blood cells of, (31) 586.
histology and physiology of pineal gland, (29) 168.
immunization against spirochetosis, (29) 588.
impaction of crop, (30) 381.
inbreeding experiments, (35) 564; (36) 870.
inheritance—
in, (35) 867.
of fecundity in, (28) 576, 577; (33) 471; (39) 781.
plumage characters in, (29) 466.
plumage color in, (26) 670.
spangling in, (38) 275.
insect parasites of, (29) 253.
killing loss in, (34) 179.
labor requirements, (36) 790.
long-tailed Japanese, description, (27) 472.
luteal cells and hen-feathering in, (40) 665.
mating habits, (40) 671.
microfilaria of, (26) 588.
molting, (37) 774.
morphology of blood, (28) 777.
nematodes affecting, (31) 184.
new cestode parasites of, (33) 775.
Orpington, handbook, (26) 270.
Orpington, secondary sexual characters in, (26) 774.
ovarian infection of, (35) 683.
ovaries, studies, (40) 664.
ovariotomized, development, (35) 171.
paralysis in, (26) 185.
pedigreeing, (38) 577.
pellagrous symptoms in, (26) 486.
permeability of ovarian egg membranes, (26) 671.
pigmentation, (39) 74, 781, 877.
pigmentation and egg production, (38) 276.
pigmentation in feathers of, (38) 171.
plumage patterns in, (33) 75.
Plymouth Rock, barred color in, (29) 372.
Plymouth Rock, inheritance of color pattern and pigmentation in, (37) 370.
protozoan organisms in rectal and cecal contents of, (26) 684.
relation between gonads and soma, (37) 868.
relation to tuberculosis in pigs, (29) 479; (34) 277.
reproduction in, (26) 670; (31) 170; (32) 670; (33) 74, 96, 471, 472; (34) 668; (36) 73; (37) 371; (38) 372.
resistance against anthrax, (27) 378.
resistance to puss-forming organisms, (39) 393.
retention of amino acids by, (33) 172.
Rhode Island Red—
broodiness in, (37) 869.
monograph, (26) 270.
notes, (29) 574.
rotation of blood plasma and serum in, (29) 881.
rumpless, occurrence and origin, (26) 573.
rumpless, sterility in, (26) 878.
secondary sex characters in, (33) 573; (34) 870; (40) 871.
selecting and mating for egg production, (37) 71.
selection for egg production, (33) 271.
serum proteins of, (32) 861.
sex differences in blood, (37) 773.
sex sequence, (39) 781.
sex studies, (39) 177.
sex-linkage in, (27) 275.
shank color, histological basis, (32) 263.
spring molt, (37) 96.
sterility in, (33) 74.
summer sickness of, (34) 178.
telegony in, (32) 263.
testing genetically, (38) 775.

Fowls—Continued.

- toxicology experiments, (40) 587.
- variation in, (39) 781.
- vitality as affected by lead, (32) 861.
- wattle disease of, (31) 782.
- White Leghorn—
 - barred plumage pattern in, (29) 471; (30) 71.
 - barring factor in, (34) 177.
 - pigmentation in, (32) 671; (33) 273.
 - white-faced black Spanish, notes, (26) 772.
 - xenia in, (33) 471.
- Fox diseases, notes, (34) 784.
- Fox farming in Canada, (28) 673.
- Foxes—
 - black and silver, care and management, (31) 770.
 - blue, of St. Paul and Otter Islands, Alaska (28) 570.
 - care and feeding in captivity, (36) 275.
 - domestication, (27) 174.
 - raising in—
 - captivity, (38) 577.
 - eastern Canada and United States, (29) 673.
 - Prince Edward Island, (29) 774.
 - relation to anthrax, (30) 780.
 - silver, raising, (34) 180; (37) 156.
 - susceptibility to infectious bulbar paralysis, (33) 179.
- Foxgloves—
 - breeding experiments, (27) 741; (37) 649.
 - inheritance in, (36) 729.
- Boxtail—
 - bacterial disease. studies, (40) 643.
 - feeding value (38) 168.
 - meadow, root systems of, (35) 639.
 - millet, notes, (26) 362.
- Frachiaea depressa n.sp. on Hevea, (39) 452.
- Fractionating apparatus, description, (39) 414.
- Fracto-cumulus and beach fog, (34) 118.
- Francoa elegans n.g. and n.sp. on roses in Italy, (38) 463.
- Frankliniella—
 - floridana n.sp., description, (40) 353.
 - insularis in Trinidad, (40) 649.
 - melanommatus n.sp., description, (31) 59.
 - morrilli n.sp. on apricot, (40) 853.
 - robusta, notes, (31) 59; (32) 848.
 - tritici, *see* Wheat thrips.
 - tritici projectus n.var., studies, (37) 561, 659.
- Franklinothrips—
 - spp. in Trinidad, (40) 649.
 - tenuicornis n.sp., description, (34) 62.
- Franseria—
 - deltoidea, root system, (27) 329.
 - dumosa, root systems, (30) 827.
- Freemartin, Hunter's, notes, (33) 668.
- Freemartins—
 - development, (39) 575.
 - notes, (40) 873.
 - studies, (40) 466.
 - theories concerning, (35) 169.
- Freezes of November, 1911, (26) 614.
- Freezing—
 - effect on—
 - composition of milk, (27) 473.
 - composition of oranges and lemons, (34) 365.
 - Cysticercus bovis, (32) 880.
 - herbaceous plants, (33) 428.
 - nitrate formation in soils, (30) 23.
 - plants, (27) 523; (31) 34, 130.
 - soils, (26) 618.
 - surface area of soils, (32) 318.
 - trees and shrubs, (28) 824.
 - germicidal effect, (34) 382.
 - point of saps, depression, (31) 221.
 - protection of plants against, (28) 330, 630.
- Freight rates—
 - on agricultural products, (34) 392.
 - on inland waterways, (32) 391.
- Frenatae, key and bibliography, (26) 859.
- Frequency distributions, constants in (36) 167.
- Freshet in Williamette River, (27) 316.
- Freshets in Savannah River, (31) 213.
- Frijoles, studies, (28) 639.
- Frit fly—
 - attacking corn, (34) 454.
 - injurious to summer-sown crops, (34) 360, 449.
 - notes, (27) 552, 560; (33) 554, 657; (38) 257, 460.
 - summary of information, (40) 860.

- Fritillaria, rusts of, (38) 548.
 - Frivaldzkia distincta, studies, (39) 659.
 - Frog meat, detection in turtle meat, (26) 111.
 - Frog tongue, notes, (40) 283.
 - Frogbit, culture for wild ducks, (33) 251.
 - Froghopper—
 - egg parasite, notes, (30) 251.
 - nymphs, parasite of, (30) 457.
 - Froghoppers—
 - life history, (36) 458.
 - notes, (27) 859; (30) 250, 251, 754.
 - studies, (28) 556.
 - Frogs—
 - as affected by temperature, (34) 751; (35) 851.
 - common leopard, feeding habits, (31) 349.
 - eating of alfalfa weevil by, (31) 655.
 - immunity against anthrax bacillus, (29) 378.
 - in Pennsylvania, (31) 648.
 - metabolism experiments, (30) 563.
 - morphology of blood, (28) 777.
 - of Long Island, (32) 448.
 - parasites found in, (28) 257.
 - Frontina—
 - archippivora, notes, (27) 656; (29) 356.
 - spectabilis n. sp., description, (34) 855.
 - Frost—
 - as affected by forests, (27) 816.
 - at San Diego, (27) 115.
 - belts of Nevada, (27) 240.
 - chance of, (36) 418.
 - conditions in cranberry marshes of Wisconsin, (26) 514.
 - conversion table, (27) 616.
 - cracks on trees, studies, (28) 330.
 - dates in Illinois, (39) 319.
 - effect on—
 - barley, (27) 560.
 - corn, (30) 138.
 - cyanogenetic compounds of sorghum, (37) 109.
 - forage plants, (32) 532.
 - germination of seeds, (35) 632.
 - grafted vines, (31) 47.
 - parthenogenic blossoms, (26) 540.
 - plants, (31) 34.
 - seed germination, (29) 421.
 - soils, (29) 212.
 - vegetation, (27) 523.
 - fall, (35) 808.
 - fighting, (27) 414, 816; (28) 639; (29) 121, 147.
 - forecasting, (35) 505; (36) 17; (38) 209; (39) 46; (40) 117.
 - forecasting—
 - for cranberry growers, (27) 539.
 - in North Pacific States, (29) 120.
 - glazed, formation, (32) 25.
 - in California, (29) 121.
 - East Indies, (35) 719.
 - Kentucky, (38) 208.
 - Maryland and Delaware, (30) 814; (31) 614.
 - New York, (27) 719.
 - 1916, (36) 510.
 - United States, (34) 414; (38) 415; (40) 209.
 - valleys and on slopes, (36) 718.
 - western Colorado, (29) 510.
- injury, mechanism, (40) 26.
- injury to cereals, studies, (31) 541, 542.
- injury to fruits, notes, (29) 147; (31) 130.
- injury to plants and fruits, (40) 741.
- leaf injury or loss due to, (35) 243.
- penetration of soils by, (26) 619.
- point, investigations, (35) 318.
- prevention, (27) 240.
- prevention in orchards, (38) 641.
- protection—
 - against, (27) 421; (29) 616; (32) 811; (34) 319, 341, 509; (35) 15.
 - heater and vaporizer for, (27) 414, 439.
 - in United States, (35) 318.
 - of almonds from, (27) 345.
 - citrus groves from, (32) 541.
 - fruits from, (27) 509.
 - lemons from, (27) 439.
 - mammie caprifigs from, (27) 616.
 - orchards from, (26) 136.
 - truck crops from, (26) 214.
 - papers on, (32) 614.
 - processed fabrics in, (33) 48.
 - studies, (27) 316, 616.

Frost—Continued.

- relation to—
 - atmospheric humidity, (33) 806.
 - temperature inversions, (34) 715.
 - topography, (28) 414; (36) 17.
- rings on pears, (26) 214, 244.
- spring, in eastern United States, (38) 717.
- studies, (27) 816; (28) 415; (29) 510, 511.
- warnings, (35) 808.
- zones in United States, (39) 139.

Frosted scale, notes, (26) 149.

Frostfish, analyses, (28) 459.

Fructose—

- antiscorbutic potency, (40) 464.
- bromination as affected by catalyzers, (40) 613.
- determination, (26) 709.
- determination in presence of aldoses, (40) 507, 613.
- specific rotation of, (29) 715.

α-*D*-Fructose pentacetate, notes, (34) 408.

Fruit—

- acclimatization and breeding in Alaska, (40) 446.
- acclimatization tests, (39) 241.
- acid content, (32) 110; (37) 714.
- acids of, identification, (40) 13.
- acreage and values in California, (40) 538.
- acreage in Washington, (40) 340.
- American, foreign markets for, (31) 44.
- American, markets for, (30) 295.
- analyses, (26) 45.
- and fruit products, methods of analysis, (33) 258.
- and seeds, treatise, (27) 729.
- animals injurious to, (26) 452.
- anoneaceous in California, (27) 242.
- anoneaceous, propagation, (27) 537.
- aphidid pests of, (31) 250.
- arsenic in, (27) 269.
- as a food essential, (38) 298.
- as affected by—
 - fertilizers, (28) 144.
 - light exclusion, (39) 541.
 - low temperature, (27) 461.
 - rainfall in Norway, (40) 810.
- ash analyses, (29) 861.
- associations, accounting system for, (33) 191, 192.
- at Agronomic Experiment Station, Santiago de las Vegas, Cuba, (34) 437.
- at Belle Fourche experiment farm, (33) 837.
- at Horticultural Gardens, Lucknow, (37) 646.
- auction sales, (40) 489.
- auctions in New York, (34) 490.
- bark beetle, notes, (32) 550.
- bark beetle, studies, (31) 852.
- bark spot, brown, studies, (40) 449.
- basket, handling, (37) 647.
- baskets and containers, standards for, (35) 598.
- belt of Michigan, (39) 320.
- bibliography, (27) 144.
- black rot, studies, (36) 250.
- blanching, (29) 867.
- blooming dates, (31) 533; (32) 535; (33) 639; (35) 644; (36) 837; (39) 745; (40) 44.
- blooming dates and yields, (30) 442.
- blossom bacillus, notes, (40) 749.
- blossom bacterial—
 - blight, (40) 844.
 - disease, investigations, (33) 148.
 - disease, notes, (32) 148.
- blossoms—
 - frost injury, (40) 741.
 - parthenogenesis among, (26) 540.
 - pollination and setting, (28) 237.
- bottling and preserving, (31) 315.
- breeding experiments, (27) 343; (29) 235; (32) 338, 437, 539, 834; (33) 735; (36) 39; (37) 647, 832, 833; (38) 641; (39) 644.
- brown rot, investigations, (38) 852.
- brown rot, notes, (39) 652, 752.
- bud development, (31) 335; (35) 837; (37) 744; (38) 640.
- bud formation, (29) 437; (37) 343, 646.
- bud formation—
 - and development, (28) 639.
 - as affected by nitrogen, (29) 539.
 - as affected by root injections, (27) 538.
 - in interior valleys, (36) 139.

Fruit—Continued.

- bud formation—continued.
 - relation to water supply, (35) 142.
 - studies, (33) 44, 735, 837, 838; (39) 346.
- bud sports in, (34) 740.
- bud weevil, notes, (36) 58.
- buds—
 - analyses, (31) 836.
 - emasculating, (27) 537.
 - freezing, (37) 344.
 - resistance to frost, (30) 839.
 - setting, (29) 339.
 - winter injuries, (29) 41.
- bug, harlequin, notes, (40) 753.
- bug, Rutherglen, notes, (40) 753.
- butters, preparation, (38) 317.
- by-product, manufacture, (34) 207.
- canker, cause, (26) 448.
- canker, studies, (36) 250.
- canned—
 - analyses, (35) 558.
 - and preserved, industry in United States, (31) 67.
 - culture volumeter for organisms from, (39) 714.
 - examination, (28) 460.
 - inspection, (27) 565.
 - market standards, (39) 717.
 - poisoning from, (37) 670.
 - production and distribution, (40) 461.
 - "springing" of tins, (40) 208.
 - swelling of tins, (40) 764.
- canning, (32) 253, 660; (33) 697, 805; (34) 714; (36) 509; (38) 12, 94, 208, 867; (39) 208, 317, 614.
- canning—
 - and preserving, (28) 209, 660, 694; (33) 318; (35) 419; (36) 113; (38) 114, 715.
 - drying, and storing, (39) 418.
 - in the home, (35) 558.
 - industry in New Jersey, (32) 65.
 - on the farm, (33) 18.
 - treatise, (36) 717.
- car-lot distribution, (40) 489.
- car-lot shipments in 1916, (39) 748.
- certificated by Royal Horticultural Society, (31) 340.
- cheese, preparation, (31) 315.
- chlorosis, treatment, (26) 749; (27) 651; (28) 447; (30) 749.
- citrus, see Citrus fruits.
- cold storage, (27) 441; (28) 591; (29) 745; (30) 640; (36) 649.
- coloring matters of, (32) 297, 309.
- composition as affected by irrigation, (29) 236.
- conservation, (36) 615, 743, 744.
- conservation by stoning and pulping, (36) 717.
- containers and loading rules, (39) 843.
- cooking, (28) 693.
- cooperative companies in Nova Scotia, (33) 639.
- cost of production, (33) 694.
- critical months, (39) 811.
- crown gall, notes, (40) 53.
- culture, (26) 741; (27) 438; (28) 437; (29) 745, 840; (32) 751; (36) 743, 744, 897; (38) 298; (39) 240.
- culture—
 - booklet, (38) 446.
 - clubs in Kentucky, (26) 496.
 - experiments, (26) 740; (27) 343, 438, 638, 842; (28) 142; (29) 235, 540; (30) 441, 442; (31) 441; (32) 337, 437, 539; (33) 236, 338, 735; (34) 231, 635; (36) 39; (37) 241, 646, 743, 744, 832; (38) 444, 641; (39) 139, 444, 445, 644, 843; (40) 444, 741.
 - for home use, (40) 742.
 - handbook, (26) 45.
 - in Alaska, investigations, (40) 446.
 - Argentina, (35) 837.
 - Arizona, (32) 232.
 - Brazil, (36) 743; (38) 142.
 - California, (32) 28; (35) 142.
 - Canada, (32) 743.
 - Ceylon, (39) 845.
 - Chile, (37) 544.
 - Dutch East Indies, (30) 697.
 - East Africa Protectorate, (32) 141.
 - England, (35) 741.
 - France, (32) 338.
 - Germany, (30) 442.

Fruit—Continued.

- culture—continued.
 - in Great Plains area, (35) 446.
 - Guam, (30) 41.
 - Guiana, (31) 391.
 - India, (27) 537.
 - Japan, (26) 237.
 - Lucknow, (34) 232.
 - New South Wales, (31) 636.
 - Paraguay, (30) 41.
 - Philippines, (32) 745.
 - Queensland, (38) 540.
 - sand hills of Nebraska, (35) 835.
 - South Carolina, (34) 233.
 - south Mississippi, (30) 639.
 - southern New Jersey, (33) 643.
 - Spain, (31) 836; (33) 238.
 - Texas, (30) 533.
 - the garden, (40) 444.
 - Tunis and Algeria, (31) 533.
- instruction in high schools, (33) 398.
- manual, (32) 337.
- on grass land, (26) 639.
- phenology and climatology in, (26) 613; (29) 15.
- culture, relation to—
 - low temperature, (34) 737.
 - temperature variations, (34) 613.
 - tenancy, (26) 687.
- culture—
 - school at Klosterneuburg, report, (29) 414.
 - textbook, (31) 394; (32) 394.
 - treatise, (26) 741; (29) 837; (33) 438, 537, 639; (34) 533; (37) 41, 544; (38) 344.
 - under glass, (28) 838.
- disease in New Zealand, (35) 456.
- disease resistance in, (29) 41.
- diseased, plaster cast of, (31) 748.
- diseases and pests—
 - control, (35) 743; (37) 832.
 - in Georgia, (35) 461.
 - in Switzerland, (40) 249.
- diseases—
 - development in transportation, (33) 741.
 - in Italy, (38) 351.
 - New York, (40) 249, 251.
 - Ontario, (36) 147.
 - Sweden, (33) 846.
 - Tasmania, (39) 850.
 - Württemberg, (29) 845.
- manual, (37) 151.
- notes, (27) 344, 747, 848; (28) 238; (30) 148, 348, 746; (31) 539, 644, 841; (32) 344; (35) 148; (40) 158, 748.
- notes and treatment, (28) 748.
- prevalence in Texas, (26) 645.
- relation to transportation, (39) 849.
- studies, (32) 750.
- treatise, (27) 438.
- treatment, (26) 741; (27) 845; (28) 238; (29) 45, 146, 551.
- dishes, preparation, (32) 560.
- distributing system, organization, (29) 543.
- district, Roswell, night temperature studies in, (40) 117.
- domesticating and improving, (32) 45.
- dried—
 - analyses, (30) 861.
 - antiscorbutic value, (39) 771.
 - boric acid in, (36) 466.
 - cooking, (38) 12.
 - examination, (28) 357.
 - insect-free package for, (33) 353.
 - insects affecting, (33) 353; (38) 317.
 - manufacture, (32) 117.
 - microbiology, (34) 460.
 - preparation, (37) 509.
 - preparation and use, (29) 462.
 - shrinkage, (27) 566.
 - South American markets, (38) 347.
 - use, (40) 67.
- drying, (33) 318; (36) 319; (37) 114, 509, 715; (38) 114, 507, 716; (39) 208, 418, 510, 541, 615, 717; (40) 615, 808, 864.
- drying—
 - and serving in the home, (40) 17.
 - apparatus for, (37) 806.
 - in the home, (38) 12.
 - industry in Chile, (27) 313.
 - utilization of breweries for, (40) 615.

Fruit—Continued.

- dusting, (38) 358.
- dusting calendar, (39) 149.
- dusting experiments, (39) 855; (40) 246.
- effect on composition of urine, (31) 761.
- essences, manufacture, (26) 117.
- ethers, character and uses, (30) 258.
- ethers, natural and artificial, differentiation, (26) 506.
- evaporated, examination, (30) 664; (36) 466.
- evaporation, (37) 715.
- evaporation and drying, (38) 316.
- evaporation in the home, (39) 510.
- exhibiting, (29) 745; (30) 41.
- exhibits, preparation, (32) 141.
- Experiment Station, Shillong, report, (37) 242.
- exports from Barbados, (28) 828.
- exports from South Australia, (29) 837.
- extracted, sale, (28) 661.
- factors affecting regional distribution, (31) 439.
- fall v. spring planting, (26) 238.
- farm cost accounting, (39) 844; (40) 192.
- farms of Ontario, labor situation on, (39) 594.
- fertilizer experiments, (27) 842; (28) 235, 236, 820; (29) 235, 639; (33) 540.
- fertilizers for, (34) 436.
- fleshy, localization of acid and sugars in, (35) 226.
- flies—
 - African, notes, (27) 457.
 - as affected by oil of citronella, (28) 455.
 - chemical reactions of, (35) 362.
 - control, (40) 169, 356.
 - control in Hawaii, (29) 53.
 - danger of introduction, (39) 467.
 - destructive to mangoes, (27) 359.
 - effect on quality of coffee, (32) 746.
 - Ethiopian, (39) 362, 467.
 - hereditary tumor in, (40) 860.
 - in Africa, (31) 455.
 - Brazil, (34) 856.
 - California, (40) 56, 169.
 - Fiji, (30) 552.
 - New South Wales, (31) 63.
 - Pusa, (32) 847.
 - natural enemies, (31) 455; (32) 454.
 - notes, (26) 349; (27) 857; (29) 158, 560, 652.
 - remedies, (29) 657; (31) 756.
- fly, Mediterranean, (39) 155.
- fly, Mediterranean—
 - as affected by cold storage, (34) 554; (35) 362.
 - as menace to Florida, (38) 262.
 - breeding in bananas, (29) 54.
 - cold storage of, (32) 450.
 - control, (34) 360.
 - control in Hawaii, (27) 259, 457; (30) 852; (31) 757; (34) 758.
 - development in lemons, (35) 259.
 - dissemination by bananas, (34) 655.
 - in environs of Paris, (35) 259.
 - in Hawaii, (38) 658; (40) 62.
 - in Madagascar, (35) 259.
 - introduction into United States, (29) 257.
 - investigations, (32) 56, 655.
 - life history, (32) 756.
 - notes, (26) 758; (27) 155, 359, 759, 862; (28) 62; (29) 234, 253; (30) 361, 845; (34) 856; (37) 565; (40) 259, 648.
 - parasites of, (32) 753; (35) 760; (37) 856.
 - relative attractiveness of oils for, (32) 153.
 - remedies, (29) 656.
 - studies, (29) 257.
- fly—
 - of Argentina, (40) 757, 758.
 - parasites in Hawaii, (31) 456; (32) 557, 757; (34) 59, 556; (36) 60; (38) 767; (40) 459.
 - parasites of, (37) 847; (38) 659.
 - Peruvian, notes, (29) 657.
 - Queensland, notes, (26) 150.
- for identification, directions for sending, (32) 338.
- for Malay Peninsula, (39) 645.
- for pressing, monograph, (28) 437.
- forecasting bloom, (33) 236; (38) 639.
- forms of sugar in, (29) 40.
- French commerce in, (31) 596.
- frost injury to, (26) 749; (30) 541; (31) 130; (32) 42.
- frosted, separation, (27) 145.
- fungi, enzymatic activity, (27) 249.

Fruit—Continued.

- garden, varieties, (28) 533.
- germination of pollen, (29) 437.
- grafting experiments, (26) 233.
- greenhouse culture, (38) 39.
- growers' associations—
 - in Ontario, (27) 39.
 - in Wisconsin, (28) 593.
- growers—
 - cooperation among, (28) 796.
 - in North Carolina, list, (31) 894.
- growing—
 - graphic summary of seasonal work, (39) 495.
 - in Gelderland, (40) 245.
 - New Mexico, (40) 18.
 - New York, influence of low temperature on, (40) 148.
 - Utah Valley, (40) 388.
 - on home grounds, (39) 543.
 - on Truckee-Carson project, (28) 839.
 - relation to climate, (28) 27.
 - relation to soil fertility, (36) 39, 640.
 - schools in Germany, (31) 599.
 - treatise, (31) 140.
- growth as affected by meteorology, (29) 510.
- gummosis, bacterial, (39) 150, 151.
- hail injury to, (35) 734.
- hail wounds on, (28) 826.
- handbook, (27) 344.
- handling and storage, (32) 141.
- hardiness in, (32) 834.
- hardy, breeding, (40) 148, 742.
- hardy, breeding in America, (35) 743.
- harvesting and marketing, (31) 898.
- Hawaiian, use, (28) 660.
- heteromorphic, germination, (28) 631.
- household utilization without sugar, (40) 864.
- hybridization experiments, (30) 329.
- identification, (31) 35.
- imports into United States, (26) 237.
- improvement, (31) 236.
- improvement by bud selections, (28) 541; (32) 439.
- improving old varieties, (35) 342.
- in Ontario, treatise, (31) 336.
- indehiscent, opening during germination, (28) 38.
- industry in—
 - Argentina, (31) 44, 47.
 - Australia, (33) 238.
 - Berkeley County, West Virginia, (33) 839.
 - Canada, (28) 437; (30) 442; (33) 93.
 - German East Africa, (27) 40.
 - Hungary, (33) 838.
 - Naples, (26) 237.
 - New Jersey, (36) 689.
 - New York, (35) 836.
 - Porto Rico, Cuba, and Florida, (35) 542.
 - South America, (31) 439.
 - Spain, (35) 342.
 - Utah, (33) 638.
 - various countries, (36) 741.
- influence of stock on, (37) 647.
- insects affecting, (26) 146, 150; (27) 54, 356, 452, 453, 552; (28) 238, 248; (29) 45, 252, 852; (30) 53, 240, 657; (31) 63, 453, 849; (32) 448; (33) 153, 252, 299, 746; (34) 251, 651; (35) 355, 461, 743; (36) 549, 853, 856; (38) 257, 459, 460, 653, 843; (40) 158, 161, 163, 256, 352.
- inspection—
 - in Queensland, (27) 39.
 - law in Arkansas, (30) 534.
 - service, Federal, (40) 344.
- introduction into Philippines, (27) 537.
- irrigated, keeping quality, (32) 743.
- irrigation, (28) 484.
- irrigation—
 - experiments, (31) 732.
 - insufficient or excessive, (39) 241.
- jams, analyses, (28) 862.
- jar caps, studies, (32) 856.
- jellies, examination, (32) 162.
- jellies, manufacture, (37) 15.
- juices—
 - analyses, (33) 240.
 - coloring matter in, (26) 608.
 - conservation, (36) 717.
 - effect on metabolism, (28) 66.

Fruit—Continued.

- juices—continued.
 - examination, (26) 660.
 - fermentation, (35) 616.
 - manufacture, (29) 798.
 - methods of analysis, (32) 109.
 - notes, (29) 116.
 - osmotic pressure, (28) 262.
 - pasteurization and biorization, (37) 805.
 - preparation (31) 315; (33) 316.
 - preservation with fluoric acid, (26) 68.
 - studies, (29) 711; (39) 107; (40) 763.
- June drop, (38) 541.
- keeping in the cellar, (28) 694.
- keeping quality as affected by fertilizers, (27) 644; (29) 640.
- keeping quality in storage, (29) 135.
- kilns, testing, (35) 367.
- lateral shoot-forming tendency, (29) 436.
- leaf spot, studies, (36) 250.
- lecanium, European—
 - notes, (26) 556; (29) 251.
 - studies, (37) 662.
- lepidopteran pest in Italy, (40) 551, 653.
- localization of acids and sugars in, (36) 110.
- loss of astringency during ripening, (26) 327.
- low-grade, utilization, (35) 717.
- manurial requirements, (29) 745.
- manuring, treatise, (30) 443.
- marketing, (27) 539; (28) 593; (31) 894, 898; (32) 287; (33) 692; (35) 892, 893; (36) 392; (38) 344.
- marketing—
 - cooperatively, (26) 92; (29) 340, 392, 543; (30) 591.
 - experiments, (28) 235.
 - in British Columbia, (31) 690.
 - California, (39) 90.
 - New York, (35) 446.
 - Ohio, (28) 894.
 - Queensland, (32) 793.
 - western Canada, (36) 493.
 - treatise, (36) 443.
- markings, relation to bud variation, (29) 147.
- maturation, (28) 525.
- medicinal, notes, (30) 145.
- methods of analysis, (32) 109.
- modeling, notes, (26) 442.
- mycology of, (26) 355.
- new, (37) 142.
- new—
 - at Minnesota Fruit Breeding Farm, (34) 637.
 - descriptions, (27) 537; (29) 436, 838; (30) 640; (31) 337; (33) 238, 337; (35) 36.
 - or noteworthy, (37) 343.
 - or noteworthy in Philippines, (34) 639.
 - varieties from seedlings, (30) 143.
 - varieties, production, (36) 237.
- normal and abnormal, juices of, (28) 821.
- oak fungus disease of, (32) 241.
- of Agra and Oudh, (31) 235.
- California, treatise, (31) 836.
- Chile, (38) 336.
- Germany, (33) 838.
- Guam, (28) 142.
- Hawaii, composition, (32) 761.
- Hawaii, treatise, (26) 741.
- Jamaica, notes, (29) 145.
- Mexico, (40) 246, 342.
- Mindanao, (28) 236.
- Philippines, (27) 537; (30) 145, 363; (37) 143, 648.
- Trinidad and Tobago, (39) 449.
- Uruguay, (32) 744.
- oily, formation of fats, (26) 801; (29) 201; (31) 312.
- oily or glassy, notes, (27) 651.
- orchard—
 - acclimatization, (34) 231.
 - aphids affecting, (37) 358.
 - blooming dates, (34) 144.
 - breeding, (36) 444.
 - breeding experiments, (33) 637.
 - bridge grafting, (34) 833.
 - chlorosis of, (32) 641.
 - cost of raising, (36) 640.
 - culture, (32) 45.
- orchard, culture—
 - experiments, (26) 45, 237; (28) 827; (33) 43, 339, 534, 637; (34) 833; (36) 137; (38) 641.

Fruit—Continued.

- orchard, culture—continued.
 - in Alaska, (32) 743.
 - Assam, (33) 238.
 - British Columbia, (29) 639.
 - California, (27) 439.
 - South Australia, (34) 341; (35) 835; (38) 540.
 - under irrigation, (28) 839.
- orchard—
 - diseases of, (30) 147, 240.
 - dry-land culture, (32) 338.
 - enemies of, (29) 646; (32) 753.
 - fertilizer experiments, (28) 741; (34) 833.
 - fungus diseases of, (28) 243.
 - hybridizing, (31) 636.
 - inoculation experiments with brown rot fungus, (33) 247.
 - insects and diseases of, (38) 257.
 - irrigation, (31) 782.
 - irrigation in sandy soil, (33) 287.
 - lessons on, (26) 392.
 - manuring, (31) 636.
 - planting, (28) 236.
 - plat experiments, (38) 743.
 - pruning, (30) 739; (32) 234; (33) 339.
 - pruning and manuring, (28) 640.
 - sap studies, (32) 139.
 - spraying, (31) 141; (32) 834.
 - spraying experiments, (33) 339, 340.
 - summer pruning, (33) 338.
 - tree fillings and wound dressings for, (32) 637.
 - varieties, (29) 237; (30) 41; (31) 828; (33) 43, 430; (34) 231; (36) 137, 140, 237; (38) 641.
- orchard, varieties for—
 - Great Britain, (31) 337.
 - Illinois, (28) 437.
 - New Jersey, (33) 439.
- orchard, wood decay of, (32) 238.
- ornamental, economic use, (32) 339.
- oxidase occurring in, (26) 310.
- packages, notes, (30) 443.
- packing, (26) 237; (32) 392.
- packing—
 - and sale in Michigan, (33) 438.
 - and transportation in India, (36) 140.
 - law in California, (35) 342.
 - marketing, and exporting, (33) 838.
- papers on, (27) 598.
- parasites, remedies, (27) 438.
- parthenocarp in, (31) 535; (34) 226.
- persistence of style on, (36) 523.
- phenological data, (33) 825.
- physico-chemical constants of, (31) 427.
- picking and handling, (34) 437.
- picking maturity, (37) 543.
- pit, studies, (32) 644.
- planting along highways, (26) 189.
- poisoning by factory smoke, (27) 831.
- pollen, germination, (35) 731.
- pollination, (27) 439; (28) 237; (30) 237; (34) 233, 341; (35) 743; (39) 445; (40) 148, 638.
- pollination—
 - and fertilization, (33) 140.
 - by bees, (38) 264.
 - experiments, (29) 235.
- pome—
 - and stone, diseases of, (33) 444.
 - factors in fruit-setting, (40) 41.
 - hypochnose, (40) 48.
 - new rust of, (31) 150.
 - pollination, (29) 541; (33) 838; (36) 140.
- precooling, (27) 441; (29) 436.
- precooling and refrigeration, (31) 44.
- premature dropping, (29) 339.
- preparations, suspicious, inspection, (26) 482.
- preservation, (30) 443, 665; (32) 509; (35) 14; (38) 616.
- preservation—
 - and inspection, (35) 367.
 - by freezing, (39) 344.
 - by pressure, (32) 416.
 - of natural colors in, (28) 237.
 - treatise, (29) 116.
- preserved—
 - dextrose content, (27) 766.
 - examination, (30) 862.
 - handbook, (28) 258.
 - inspection in Canada, (26) 157.

Fruit—Continued.

- preserving and processing, (30) 316.
- preserving without sugar, (39) 717.
- prices in Bern, (32) 162.
- processing for exhibition, (36) 319.
- product factories in Utah, possibilities for, (33) 638.
- product plants, establishing, (39) 894.
- production, extension work in, (40) 834.
- production in New York, (27) 598.
- products—
 - adulteration, (29) 865.
 - methods of analysis, (26) 99; (29) 865.
 - of Uruguay, (32) 744.
 - preparation and judging, (30) 259.
 - standards for, (28) 862.
- propagation, (26) 237; (34) 533; (38) 345.
- propagation through bud selection, (35) 446.
- propagation, treatise, (36) 140.
- protection against—
 - frost, (27) 509; (37) 744.
 - fruit fly, (32) 742.
- puling, (26) 238; (32) 835; (33) 838; (34) 533, 833; (37) 242, 344; (39) 241, 445.
- pruning experiments, (26) 45; (35) 38; (39) 38.
- pruning-wound dressing for, (32) 835.
- puling, (39) 717.
- purin content, (40) 205.
- quarantine law in Missouri, (26) 854.
- recipes, (37) 670.
- reducing and nonreducing sugars in, (29) 503.
- regulating bearing habit, (40) 148.
- relation to typhoid fever, (28) 258.
- resistance to—
 - frost, (31) 130.
 - fungi, (27) 648.
 - insects and fungi, (35) 342.
- respiration in gases, (29) 135, 538.
- ripe and unripe, pectins of, (40) 202.
- ripening—
 - dates, (33) 639.
 - in relation to humidity, (36) 741.
 - processes, (26) 139, 310.
 - studies, (27) 466; (31) 311.
- root development, (29) 437.
- root rot, notes, (40) 748.
- root rot, studies, (35) 547; (38) 852.
- root systems, (35) 837.
- rots, investigations, (26) 749.
- russetting, (27) 440.
- rust and Coryneum, treatment, (35) 351.
- rust, notes, (33) 549.
- "salmon fly" injury, (39) 257.
- sampling device for, (37) 711.
- scab, treatment, (33) 237.
- scale, European—
 - as affected by hydrocyanic acid gas, (33) 855.
 - notes, (29) 251.
 - remedies, (26) 561.
- scale, Japanese, remedies, (29) 854.
- seedless—
 - and malformed, notes (29) 147.
 - studies, (31) 35.
- seedlings, index of hardness, (40) 740.
- seeds, hydrocyanic acid content, (27) 11.
- self-fertility and self-sterility of, (33) 236.
- self-sterility in, (34) 341.
- setting by cultivated plants, (27) 329.
- shipping, (39) 843, 849.
- shipping experiments, (36) 640.
- shipping organizations, accounting system for, (38) 793.
- shot-hole, notes, (40) 748.
- silver leaf disease—
 - cause, (38) 50.
 - investigations, (26) 244, 449; (28) 348; (29) 847; (30) 451.
 - notes, (26) 749; (29) 45; (33) 649, 741; (40) 748.
 - treatment, (28) 849.
- sirup, preservation with formic acid, (29) 463.
- small—
 - acclimatization, (34) 231.
 - as affected by lime, (29) 40.
 - breeding experiments, (28) 542.
 - cover crops for, (34) 294.
 - culture, (29) 148; (31) 142, 441; (35) 36; (37) 447.

Fruit—Continued.

- small, culture—
 and preservation, (38) 842.
 experiments, (26) 237; (28) 827; (32) 141; (33) 43; (36) 137; (38) 641; (39) 444, 445.
 in Alaska, (29) 743; (32) 743.
 Assam, (33) 238.
 British Columbia, (29) 639; (34) 438.
 Massachusetts, (26) 541.
 New York, (26) 239; (35) 836.
 Oregon, (39) 241.
 Utah, (33) 638.
- small—
 diseases, (27) 349; (29) 242; (30) 147; (40) 158.
 drying, (37) 715.
 enemies, (27) 756; (32) 753.
 for home and commercial planting, (33) 537.
 for home and market, (39) 242.
 industry in California, (29) 639.
 insects affecting, (28) 352; (30) 240; (34) 651; (39) 861; (40) 158, 256.
 irrigation, (36) 89.
 irrigation on sandy soil, (33) 287.
 manuring, (31) 636.
 marketing by parcel post, (39) 543.
 mold on, (36) 195.
 pruning, (32) 234; (33) 339.
 spraying experiments, (27) 143.
 standard containers for, (38) 40.
 temperatures when picked, (40) 150.
 treatise, (37) 544, 648.
 varieties, (28) 436; (29) 145, 237; (31) 828; (33) 43, 430; (34) 231; (35) 742; (36) 137, 140, 237; (38) 641; (39) 139.
 varieties for Great Britain, (31) 337.
 varieties for Illinois, (28) 437; (29) 241.
 varieties for Ohio, (37) 241.
 variety tests, (39) 444.
 wild, desiccation, (32) 117.
 wild, preservation, (26) 117.
- sod v. tillage, (26) 45.
 soils of Pennsylvania, (28) 143.
 South American markets, (37) 345.
 spray calendar, (39) 345.
 sprayed, arsenic on, (38) 54.
 spraying, (32) 834; (39) 149, 250, 345, 548, 855.
 spraying—
 experiments, (27) 842; (29) 235.
 formulas, (39) 762.
 with nitrate of soda, (36) 535.
- spring v. fall planting, (33) 439.
 standard barrel for, (32) 499.
 standard containers for, (38) 40.
 stations, experimental, in Ontario, (27) 39.
 sterilization for the home, (36) 17.
 stocks for, (32) 234.
 stocks, notes, (35) 342.
 stocks, tests, (40) 444.
- stone—
 bacterial disease of, (34) 248.
 culture in southern Utah, (30) 442.
 diseases in Rhone valley, (38) 50.
 diseases of, (36) 750.
 gummosis, (30) 749.
 gummosis and brown rot of, (38) 454.
 pruning, (32) 837.
 resistant stocks for, (35) 645.
 ripe rot of, (37) 151.
 spray calendar for, (26) 539.
 spraying mixtures for, (35) 143.
 wild species as hosts of *Coccomyces*, (39) 456.
- storage, (26) 441; (40) 150, 864.
- storage—
 cellar, description, (27) 644.
 cellars, (38) 292.
 growth and spread of fungi in, (26) 749; (28) 53.
 in relation to humidity, (36) 741.
 on the farm, (32) 456.
 ventilation, (29) 538; (31) 533.
- storehouses, construction and management, (32) 338.
 subtropical, studies, (40) 763.
 subtropical, varietal standardization, (36) 537.
 suitability for jelly making, (35) 418.
 sunscald, notes, (27) 440.
 survey of Mesa County, Colorado, (37) 241.
 thinning, (37) 895.
 transportation, (35) 835.

Fruit—Continued.

- transportation and storage investigations, (30) 739.
 treatise, (27) 439.
- tree bark beetle—
 fungus-growing, investigations, (29) 858.
 notes, (30) 161, 657; (31) 249; (36) 258.
 remedies, (40) 547.
- tree—
 bark diseases, studies, (39) 150.
 black spot canker, notes, (27) 448.
 borer, notes, (28) 356; (34) 361.
 borers, protection against, (40) 445.
 canker, notes, (33) 853; (39) 150, 855.
 canker, treatment, (29) 348.
 chlorosis, notes, (31) 746; (40) 748.
 chlorosis, treatment, (27) 48.
 crown gall, notes, (29) 348.
 crown rot, studies, (28) 347; (39) 150.
 dieback, studies, (39) 149.
 fire blight, treatment, (39) 551.
 flower and branch blight, treatment, (28) 747.
 foliage, studies, (26) 407.
 gummosis, notes, (34) 846; (36) 849.
- tree leaf roller—*see also* *Archips argyrospila*.
 notes, (26) 758; (28) 450; (30) 157, 249, 361; (32) 651; (35) 253; (38) 358; (40) 161, 162, 263.
 pupal instar, (34) 357.
 remedies, (28) 856; (31) 850; (34) 63, 552, 755; (35) 551; (37) 56; (40) 162.
 studies, (27) 160, (28) 754.
- tree—
 leaf *Syneta*, notes; (32) 651; (36) 58.
 leaves, insects affecting, (34) 549.
 Nectria, notes, (38) 548.
 stem disease, notes, (26) 446.
 sun scald, studies, (36) 544.
 twig disease, notes, (29) 49.
 withertip, notes, (27) 152.
 wounds, asphaltum as a dressing for, (34) 154.
- trees, arsenical injury, (36) 849.
- trees as affected by—
 cement dust, (27) 152; (31) 150.
 dynamiting, (34) 125.
 grass, (29) 339; (33) 339.
 tin bands or girdles, (35) 446.
- trees—
 asphaltum treatment, (40) 445.
 bearing only in alternate years, (33) 236.
 dying in New Zealand, (38) 452.
 failure to bear, (38) 298.
 fall v. spring planting, (35) 837; (38) 41, 640.
 fertilizing when planted, (33) 237.
 manuring, (28) 741.
 oak fungus and wood decay of, (37) 51.
 planting in dry lands of Chile, (31) 240.
 red spider affecting, (27) 265.
 regulation of sale, (28) 836.
 ringing experiments, (32) 636.
 ripening of growing parts, (35) 542.
 root hardiness, (36) 840.
 size for planting, (33) 338.
 taxing, Christ-Junge method, (36) 443.
 top grafting, (31) 740; (34) 437.
 variability of yield, (38) 743.
 winter injury, (27) 538; (30) 344, 352; (40) 348, 834, 835.
 winterkilling, (35) 234.
 withering of blooms, (30) 47.
 wood decay in, (34) 53.
- tropical and subtropical—
 in California, (31) 47.
 manual, (34) 438.
 treatise, (27) 645.
- tropical—
 cold storage, (32) 439, 745.
 culture and improvement, (36) 742.
 culture in Philippines, (34) 635.
 in Philippines, (35) 643.
 in the Visayas, (26) 336.
 preparation and use, (27) 567.
 recipes, (28) 863.
 shield budding, (32) 142.
 tests, (38) 842.
 vegetative propagation, (36) 641.
 uniform score card for, (29) 40.
 unilocular, asymmetry and fertility in, (38) 29 .

Fruit—Continued.

- use in Surinam, (28) 761.
- use in the diet, (38) 166.
- use in the dietary, (29) 862.
- varieties, (27) 435, 842; (29) 235, 540; (30) 441, 640; (32) 337, 437; (33) 338; (34) 231, 635; (36) 39; (37) 241, 343, 832; (38) 142, 443, 641, 842.
- varieties for—
 - Arkansas, (30) 533.
 - British Columbia, (34) 437.
 - Georgia, (34) 436.
 - Idaho, (33) 44.
 - Illinois, (34) 42; (39) 241.
 - Maine, (37) 41.
 - Minnesota, (33) 140; (37) 241; (40) 148, 740, 742.
 - Nebraska, (40) 340.
 - New Jersey, (34) 144.
 - Ontario, (28) 839.
 - Ontario and Quebec, (32) 539.
 - Pacific Northwest, (29) 745.
 - United Kingdom, (37) 833.
 - Utah, (29) 147.
 - West Virginia, (34) 637.
 - western Washington, (33) 44; (34) 796.
- varieties, new, for South Dakota, (39) 346.
- variety—
 - adaptability, (29) 147.
 - collections, (40) 834.
 - tests, (39) 444; (40) 444.
- washing in canning factories, (37) 416.
- waste, vinegar from, (38) 414.
- water content as affected by cooking, (26) 462.
- white-marked tussock moth on, (39) 561.
- wholesale distribution, (33) 692.
- wild, culture, (27) 242.
- wild, of Paraguay, (30) 41.
- wine, diminution of acidity in, (29) 117.
- wines, acids of, (37) 310.
- wines, micro-organisms in, (29) 209.
- worms, green, *see* Green fruit worm and *Xylina* spp.
- worms in Nova Scotia, (35) 853.
- Fucellia* of North America, (40) 263.
- Fuchsias, carbon dioxide for, (31) 532.
- Fucic acids, studies, (40) 804.
- Fucidin, description, (29) 566.
- Fucosan, properties of, (29) 566.
- Fucus*—
 - palmatum*, analyses, (26) 324.
 - vesiculosus*, analyses, (37) 814.
 - vesiculosus*, enzymes of, (30) 728; (35) 25.
- Fuel—
 - analyses, (29) 119.
 - briquetting investigations of Bureau of Mines, (31) 386.
 - for internal combustion engines, (30) 690.
 - for oil engines, (39) 792.
 - for oil, gas, and steam engines, cost, (30) 88.
 - oil as wood preservative, (32) 841.
 - oil, larvicidal value, (37) 665.
 - oil, tests, (26) 539; (28) 486.
 - prices in Washington State, (38) 568.
 - saving in house heating, (34) 789.
- Fuels—
 - briquet tests, (31) 386.
 - for cooking, costs, (40) 658.
 - household, tests for, (31) 93, 462.
 - mixed, possibilities of, (31) 386.
- Fulgoroidea, hymenopterous parasites of, (34) 557.
- Fulica atra* as a game bird, (31) 555.
- Fuligo septica*, notes, (30) 247.
- Fuller's earth, use in chemical separations, (38) 411.
- Fumago—
 - citri*, notes, (34) 446.
 - oleae*, notes, (27) 857.
- Fumeric acid in fresh beef, (31) 759.
- Fumes—
 - apparatus for absorption, (30) 505.
 - effect on soils and vegetation, (27) 229.
 - effect on vegetation, (38) 429.
- Fumigants, effect on baking quality of flour, (26) 357.
- Fumigating—
 - machines for hydrocyanic acid gas, (33) 556.
 - room, gas-tight door for, (34) 60.
- Fumigation—
 - apparatus, description and tests, (26) 893.
 - as affected by temperature and moisture, (29) 762.

Fumigation—Continued.

- dosage tables for, (26) 561.
- leakage gage, description, (27) 163.
- leakage meter, calibration, (34) 751.
- notes, (29) 640; (33) 559; (38) 458.
- of citrus trees, (39) 463.
- of households, (34) 653.
- studies, (40) 752.
- tents, leakage, (26) 256, 561.
- Fumigator for insects, construction, (27) 564.
- Fungi—
 - action in soils, (38) 118.
 - American, treatise, (27) 329.
 - ammonia accumulation by, (35) 513.
 - ammonification by, (36) 221.
 - and bacteria, relative importance in soils, (36) 434.
 - and hosts, chemical relations, (32) 822.
 - and windfall timber, relations, (39) 847.
 - aquatic, deposition of iron on, (26) 825.
 - as affected by—
 - aluminum, (34) 526.
 - cold, (34) 538.
 - illuminating gas, (39) 632.
 - metallic salts, (28) 527.
 - Röntgen and ultraviolet rays, (38) 855.
 - tobacco smoke and methyl iodide vapor, (39) 527.
 - assimilation—
 - investigations, (28) 824.
 - of nitrogen by, (29) 824; (30) 629.
 - behavior with organic acids, (26) 203.
 - biological studies, (34) 49.
 - causing discoloration in paper, (37) 630.
 - cellulose destroying, (34) 136.
 - chemistry of, (26) 746.
 - chemotropic reactions in, (36) 845.
 - Chinese, studies, (27) 848.
 - Chondriosomes in, (32) 822; (35) 635.
 - classification, treatise, (27) 149.
 - conduction of lithium, (39) 122.
 - conservation, (36) 615.
 - cultivated by termites, (40) 453.
 - damping off, treatment, (33) 98.
 - destructive to bees, (28) 562.
 - development in relation to food supply, (32) 423.
 - development on fatty hydrocarbons, (29) 133.
 - differentiation in host tissues, (39) 247.
 - edible—
 - arsenic in, (27) 269.
 - culture and use, (35) 470.
 - digestibility, (29) 865.
 - harmful effects of, (31) 558.
 - nitrogenous constituents of, (28) 501.
 - notes, (26) 237; (28) 861.
 - nutritive value, (37) 669.
 - of South Africa, (29) 461.
 - effect on organic acids, (27) 526.
 - endoconidia production in, (35) 247.
 - entomogenous—
 - in Barbados, (38) 157.
 - in St. Vincent, (36) 153.
 - investigations, (27) 565.
 - notes, (33) 58.
 - of Porto Rico, (33) 459.
 - of Trinidad, (31) 145.
 - review of literature, (28) 753.
 - utilization, (32) 63.
 - enzyme production and extraction, (39) 247.
 - exotic, descriptions, (27) 445.
 - filamentous—
 - destruction of cellulose by, (28) 627.
 - importance in soils, (26) 825.
 - fission, biology, (35) 25.
 - fixation of—
 - atmospheric nitrogen by, (26) 123.
 - nitrogen by, (27) 225.
 - food value and toxicity, (32) 760.
 - growth—
 - and spread in storage fruit, (26) 749; (28) 53.
 - in heated soils, (26) 815; (27) 620.
 - in plant decoctions, (37) 728; (38) 524.
 - on culture media and trees, (40) 203.
 - heat development of, (31) 323.
 - hemolytic power, (30) 878.
 - higher, composition, (26) 802.
 - humidity relations, (37) 549.
 - hydrocyanic acid—
 - and benzoic aldehyde producing, (36) 734.
 - in, (26) 228.

Fungi—Continued.

- imperfect, notes, (30) 351.
- imperfect, on cereals, (30) 846.
- in alimentary canal of man, (35) 560.
- soils, (36) 214, 215.
- Stilton cheese, (28) 879.
- wheat seed, (32) 750.
- isolating single-spore strains, (34) 538.
- leaf injury or loss due to, (35) 243.
- lower—
 - enzymes of, (27) 25.
 - factors affecting growth and sporulation, (28) 524.
 - polysaccharides of, (33) 411.
- manual, (27) 727.
- mold—
 - assimilation of salts by, (29) 28, 29, 30.
 - autolysis, (28) 803.
 - carbon and nitrogen assimilation by, (33) 726.
 - cleavage of organic acids by, (30) 503.
 - formation and regulation of enzymes by, (31) 730.
 - nitrogen nutrition of, (31) 223; (32) 327, 728; (36) 527.
 - protein synthesis by, (27) 525.
 - relation to cane sugar, (28) 429.
 - relation to iodine compounds, (29) 133.
 - selective power of, (33) 824.
 - source of nitrogen for, (27) 226.
- new or little known, (39) 753.
- nitrogenous constituents, (27) 364.
- nutrition of, (31) 426.
- of Ceylon, (39) 333.
- Great Britain, treatise, (27) 25.
- Japan, (38) 426, 648; (39) 753.
- Porto Rico, (40) 844.
- soils, studies, (37) 718.
- Texas soils, (36) 434.
- Trinidad, (26) 146.
- Washington, (33) 545.
- on Lolium, studies, (26) 545.
- on seed coats of grains, (28) 442.
- oxidation of manganese by, (32) 514.
- parasitic—
 - culture on living plants, (28) 545.
 - dissemination, (38) 349.
 - effect on cereals, (31) 541.
 - effect on woody plants, (31) 343.
 - growth in concentrated solutions, (36) 245.
 - growth in cultures, (38) 757.
 - host relations, (28) 442.
 - in Colombia, (35) 243.
 - Iowa, (26) 51.
 - Japan, (27) 149.
 - Michigan, (30) 240.
 - New Jersey, (39) 648.
 - Russia, (40) 155.
 - Turin, (30) 47, 746.
 - Wisconsin, (26) 341; (35) 844.
- infection experiments, (26) 845; (28) 149, 844; (33) 847.
- on scale insects, (30) 455.
- on sugar cane, (26) 748.
- overwintering, (33) 647.
- oxidizing enzymes in, (27) 25.
- relation to host plants, (27) 543, 648.
- specialization, (37) 149.
- pathogenic, review of investigations, (28) 178.
- pathological forms, (26) 545.
- peptolytic enzymes in, (32) 130.
- physiology, (37) 129, 727, 728; (38) 524.
- poisonous, detection, (30) 880.
- polymorphism in, (34) 32.
- preservation in cold storage, (27) 356.
- production of mycelium by, in soil, (35) 820.
- relation to—
 - callose in root hairs, (29) 326.
 - cell content of host plants, (28) 443.
 - citrus gummosis, (33) 55.
 - meteorological conditions, (27) 543.
 - soils, (27) 728.
 - tuber formation, (30) 29, 730.
- respiration in, (26) 628.
- Russian, new species, (28) 51.
- rust—
 - and smut, spore formation in, (28) 745.
 - culture experiments, (28) 242; (31) 540.
 - of Great Britain, treatise, (30) 745.

Fungi—Continued.

- rust—continued.
 - wintering in Bohemia, (28) 345.
 - wintering over in uredo stage, (29) 346.
 - saprophytic, parasitic activity, (32) 640.
 - saprophytic stage in, (28) 442.
 - Schweinitz collections, (39) 30.
 - smut—
 - notes, (26) 746.
 - of Switzerland, (26) 645.
 - parasitism, (31) 540.
 - treatise, (27) 746.
 - soil—
 - ammonifying efficiency, (32) 29, 817.
 - infection of wheat by, (26) 746.
 - notes, (27) 223.
 - studies, (28) 442, 524; (31) 127.
 - solution of copper by, (26) 853.
 - specialization of parasitism in, (28) 442.
 - storage of oxygen by, (28) 329.
 - textbook, (38) 147.
 - toxicity, (30) 878.
 - treatise, (27) 575.
 - treatment, (32) 447.
 - use against scale insects, (28) 453.
 - viability, (26) 819.
 - wood-destroying—
 - abortive sporophores of, (33) 552.
 - black zones of, (38) 555.
 - culture media, (38) 254.
 - in orchard trees, (34) 53.
 - notes, (31) 247; (32) 54; (39) 255.
 - studies, (40) 350.
 - wood injuring, studies, (27) 354; (34) 240.
 - yeast-like, occurrence and pathogenicity, (36) 879.
- Fungicide—**
- dealers, licensed, (27) 663.
 - law in Ohio, (31) 740.
 - laws, (28) 642; (29) 266; (36) 39; (40) 45.
- Fungicides—see also Sprays and specific kinds.**
- adherent, description, (33) 449, 450.
 - analyses, (27) 441; (31) 49, 142, 340, 740; (32) 169, 438; (33) 47, 735; (34) 436, 639; (35) 141; (36) 744; (37) 114, 243; (38) 643.
 - and insecticides, compatibility, (32) 243.
 - classification and compatibility, (31) 751.
 - compatibility chart, (39) 39.
 - copper, studies, (26) 853.
 - copper sulphate coefficient, (40) 253.
 - detection of inert ingredients, (27) 655.
 - determination of adhesiveness, (28) 538.
 - effect on—
 - germination of wheat, (26) 845; (30) 837.
 - grapevines, (27) 850.
 - formulas, (40) 543.
 - inspection—
 - and analyses, (39) 240, 345.
 - in Maine, (29) 146; (34) 40; (36) 467.
 - in Ohio, (31) 740; (36) 744.
 - manual, (29) 341.
 - notes, (28) 148.
 - phenolic, studies, (35) 208.
 - powdered, tests, (30) 651.
 - preparation (39) 453; (40) 746.
 - preparation and use, (26) 47, 48, 445, 840, 841; (27) 45, 344, 845; (28) 48, 238, 449, 642, 841; (29) 146, 236, 459, 554, 651; (30) 442, 534, 642, 847; (31) 141, 153, 635; (33) 639; (34) 436, 539, 643, 739; (35) 743.
 - promoting adherence in, (30) 248.
 - spreading qualities, (27) 753.
 - standard v. nonstandard, (34) 232.
 - superficial tension and wetting power, (27) 548.
 - tests, (27) 855; (28) 48, 348; (33) 648; (35) 149; (37) 47, 247; (39) 348.
 - treatise, (31) 517.
 - use, (27) 45.
 - use with arsenical poisons, (38) 156.
 - wetting power, (29) 157, 451, 850.
- Fungus—**
- beetle, two-banded, notes, (37) 567.
 - fairy rings, studies, (38) 222.
 - flora of soils, (27) 728.
 - flora of South Africa, studies, (29) 45.
 - galls, storage of reserve materials in, (28) 429.
 - gnats of North America, (27) 57.
 - new fermenting, description, (27) 224.
 - paint-destroying, description, (27) 253.

Fungus—Continued.

- parasites of—
 - Coccidae and Aleurodidae, utilization, (28) 60.
 - man and animals, (32) 271.
 - plants, effect on soils, (29) 150.
- Funkia ovata*, stomatal movement in, (26) 627.
- Funnel, laboratory, description, (40) 409.
- Funtumia*—
 - elastica—
 - culture and tapping, (26) 339.
 - culture in Belgian Kongo, (35) 544.
 - plantings in Kongo, (26) 50.
 - tapping experiments, (31) 342.
 - growth and rubber yielding value, (37) 548.
- Fur-bearing—**
 - animals—
 - breeding and raising, (29) 373.
 - domestication, (37) 573.
 - laws relating to, (34) 751; (36) 455; (38) 456; (40) 350.
 - natural history, (26) 772.
 - of an Indiana farm, (30) 354.
 - treatise, (40) 646.
 - mammals of North America, (29) 70.
- Fur—**
 - buyers' guide, (34) 570.
 - farming—
 - booklet, (29) 672.
 - in Canada, treatise, (32) 870.
 - in United States and Canada, (39) 880.
 - notes, (37) 573.
 - textbook, (27) 774.
 - with mink, (40) 373.
 - industry in Alaska, (31) 727.
 - trade, treatise, (26) 772.
 - waste, analyses, (28) 523.
- Furcraea—**
 - cabuya fiber, strength of, (29) 313.
 - fiber from, (39) 442.
 - gigantea as a fiber plant, (37) 233.
 - gigantea, varieties grown in Mauritius, (34) 434.
 - spp., binder twine from, (27) 534.
- Furfural—**
 - detection in ethyl alcohol, (29) 312.
 - determination, (27) 113.
 - formation from wood during steaming process, (33) 614.
 - formation in wine, (31) 316.
 - in cider vinegar, (32) 808.
 - precipitants for, (36) 318.
 - production in curing hay, (35) 312.
- Furniture—**
 - disinfection, (32) 456.
 - insects affecting, (28) 248; (30) 53; (34) 651.
- Furs—**
 - cold storage, (27) 565.
 - home manufacture, treatise, (38) 13.
- Fusaea*, description, (31) 339.
- Fusariella populi* n.sp., description, (40) 155.
- Fusarium—**
 - batatatis—
 - description, (32) 51.
 - notes, (31) 447.
 - relation to sweet potato stem rot, (29) 647.
 - treatment, (28) 849.
 - blight of potatoes, (40) 847.
 - bulbigenum, notes, (30) 354; (31) 646.
 - coeruleum, notes, (37) 350.
 - coeruleum, studies, (39) 250, 651.
 - colorans, notes, (26) 851.
 - colorans, relation to cacao canker, (32) 548.
 - conglutinans, control, (37) 150.
 - conglutinans, studies, (34) 542; (36) 248; (40) 156.
 - cubense—
 - description, (38) 757.
 - generation of aldehydes by, (37) 843.
 - notes, (28) 349.
 - culmorum, studies, (30) 846.
 - dianthi, description, (28) 154.
 - dianthi, notes, (27) 752.
 - didymum, notes, (32) 750.
 - diseases as affected by winter covering of cereals, (37) 48.
 - diseases of cereals, review, (26) 446.
 - distribution in soil, (39) 254.
 - effect on composition of rye, (36) 633.
 - erubescens on tomatoes, (34) 53.

Fusarium—Continued.

- eumartii—
 - n.sp., description, (34) 246.
 - notes, (36) 147.
 - studies, (36) 648.
- gemmiperda, notes, (28) 241.
- gramineum, relation to citrus gummosis, (29) 247.
- heveae n.sp., notes, (37) 253.
- incarnatum, notes, (29) 150.
- infection of grain by, (29) 244.
- lateritium—
 - notes, (36) 752.
 - relation to apple sour sap, (38) 452.
- lathyri—
 - investigations, (37) 155.
 - n.sp., description, (32) 446.
- limonis, notes, (31) 152, 244.
- limonis, treatment, (33) 149.
- lini—
 - notes, (30) 649.
 - relation to soil temperature, (36) 748.
 - relation to temperature, (39) 249.
 - resistance to, (40) 745.
 - studies, (38) 449.
- lycopersici—
 - description, (31) 49.
 - description and treatment, (30) 50; (32) 147.
 - notes, (26) 649; (37) 551.
 - tomatoes resistant to, (34) 646.
- malli n.sp., on onion, (40) 643.
- maydiperdum n.sp., description, (26) 446.
- metachroum, notes, (28) 847.
- moniliforme, treatment, (36) 547.
- mycelium in tobacco, staining, (39) 248.
- n.spp., descriptions, (31) 544.
- n.spp. in soils, (39) 249.
- n.spp., notes, (29) 243.
- neglectum n.sp., description, (28) 845.
- nivale—
 - notes, (29) 47, 244, 445; (30) 448.
 - relation to Nectria graminicola, (30) 846.
 - studies, (31) 343.
 - treatment, (26) 446.
- niveum on watermelon, (34) 53.
- on cereals, treatment, (35) 245.
- orobanchus, pigments of, (32) 428.
- oxysporum, notes, (29) 646; (30) 649; (32) 136, 239; (36) 846.
- oxysporum, studies, (28) 851; (36) 846; (38) 848.
- pathological species, (34) 840.
- putaminum, notes, (31) 539.
- putrefaciens, studies, (26) 749.
- radicicola—
 - studies, (35) 455.
 - temperature relations, (36) 649.
- rots of sweet potato, (39) 854.
- rubi, investigations, (26) 850.
- rubiginosum, notes, (31) 542; (32) 642, 843.
- samoense n.sp., description, (31) 347.
- solani, notes, (30) 48, 847; (32) 546 (35) 750; (37) 551.
- sp. affecting—
 - alfalfa caterpillar, (32) 58.
 - apple buds, (30) 352.
 - Lolium, (26) 545.
 - potatoes, (30) 539.
- sp. as affected by cold, (34) 538.
- sp., notes, (27) 45, 750; (28) 246, 647.
- sp. on bananas, (32) 751; (34) 841.
- sp. on beans, (36) 248; (37) 840.
- sp. on carnations, (38) 51.
- sp. on garden peas, (39) 853.
- sp. on oranges, (35) 749.
- sp. on raspberry roots, (34) 55.
- sp. on rubber, (32) 347.
- sp. on sesame, (34) 50.
- sp. on sugar cane, (37) 553.
- sp. on tobacco, (32) 844; (39) 854.
- sp. relation to—
 - citrus gummosis, (31) 449.
 - damping-off of truck crops, (35) 844.
- sp., studies, (26) 57; (27) 447.
- sp., treatment, (27) 655; (31) 647.
- spp., descriptions and treatment, (29) 847.
- spp., distribution on potatoes, (27) 247.
- spp., effect on composition of potatoes, (35) 246.
- spp., enzymatic activity, (27) 249.
- spp. from cankered cacao bark, (31) 750.
- spp. in soils, relation to potato diseases, (39) 249.

Fusarium—Continued.

- spp., infection experiments with, (27) 247.
 spp., notes, (28) 546, 845; (29) 243; (31) 147; (39) 52.
 spp. on—
 bananas, (31) 244.
 cacao, (31) 242, 750.
 coffee, (32) 646; (38) 51.
 conifer seedlings, (40) 545.
 potatoes, (31) 345, 447; (32) 642; (33) 849; (34) 246; (37) 652, 654; (40) 449.
 sweet potatoes, (31) 544; (32) 50, 343; (33) 743; (34) 156; (40) 347.
 tomatoes, (33) 845.
 spp., relation to—
 apple rot, (33) 348.
 potato stem lesions, (39) 649.
 potato tuber rot and wilt, (35) 246; (38) 149.
 rye "drunk bread" disease, (35) 845.
 tomato blight, (32) 444.
 spp., studies, (30) 542.
 spp., treatment, (27) 351; (31) 647.
 taxonomy, (29) 444.
 tracheiphilum, studies, (37) 50.
 trichothecoides—
 n.sp., description, (27) 650.
 on watermelon, (38) 645.
 treatment, (28) 848; (35) 847.
 trifolii n.sp., description, (36) 748.
 tritici, notes, (28) 443.
 tuberivorum—
 and *F. trichothecoides*, identity, (36) 846.
 n.sp., description, (29) 47.
 vasinfectum—
 description, (28) 346.
 notes, (26) 844; (30) 149, 538; (31) 343; (40) 845.
 on cotton, (32) 342.
 on okra, (38) 851.
 willkommii, description, (27) 152.
Fusel oil—
 determination in distilled spirits, (29) 798.
 insecticidal and larvicidal value, (34) 359.
Fushia n.g. and n.sp., description, (38) 857.
Fusicladium—
 butyrospermi n.sp., description, (30) 48.
 dendriticum, *see* Apple scab.
 depressum petroselinii, notes, (28) 851.
 effusum, notes, (39) 459.
 effusum, treatment, (31) 245; (39) 553.
 macrosporium n.sp., description, (26) 651.
 macrosporium, notes, (37) 253, 838; (38) 153, 356.
 parasitism, (27) 46.
 pirinum—
 description, (31) 749.
 notes, (34) 846.
 relation to weather, (32) 842.
 pruni, notes, (40) 749.
 sp. on pears, treatment, (32) 842.
 spp. on orchard fruits, (37) 550.
 spp., studies, (28) 241.
 vanillae, description, (27) 450.
Fusicoccum—
 cinerescens, notes, (27) 747.
 perniciosum, notes, (40) 160.
 putrefaciens—
 n.sp., description, (38) 252.
 relation to temperature and rainfall, (38) 454.
 treatment, (39) 749.
Gabi—
 culture, (38) 231.
 culture and analyses, (32) 37.
 culture in Philippines, (40) 231, 244.
Gadfly—*see also* *Tabanus* spp.
 in Florida Everglades, (40) 757.
 in lands, prevention, (37) 867.
 notes, (29) 454.
Gages, automatic, use in stream measurement, (33) 777.
Galactan—
 determination in food and feeding stuffs, (29) 411.
 of *Larix occidentalis*, (35) 611.
Galactase of milk, fermenting power, (31) 413.
Galactose—
 absorption in the intestines, (28) 763.
 acustomation of yeast to, (28) 202.
 crystalline pentacetate of, (35) 502.
 detection in presence of lactose, (28) 205.
 determination, (26) 709; (36) 713.

Galactose—Continued.

- separation from lactose and glucose, (26) 202.
 toxicity for green plants, (38) 224.
 toxicity toward dogs, (28) 462.
 toxicity toward plants, (35) 28.
 utilization by pea seedlings, (27) 730.
Galactosidase β in vegetable kingdom, (38) 524.
Galalith, fertilizing value, (28) 736; (31) 518.
Galbraith, A. J., neurological notice, (40) 500.
Galega officinalis—
 analyses, (31) 863.
 culture experiments, (30) 632.
 description and control, (37) 142.
Galeopsis grandiflora, betains in, (27) 204.
Galeopsomyia, new genus, description, (36) 556.
Galeruca—
 alni, notes, (28) 554.
 xanthomelaena, *see* *Galerucella luteola*.
Galerucella—
 cavicollis, *see* Cherry leaf beetle,
 decora, notes, (28) 256; (34) 853; (38) 257.
 luteola—
 biology and control, (39) 564.
 life history, (36) 461.
 notes, (26) 147; (27) 658; (28) 57, 158; (30) 455, 655; (33) 253; (34) 752.
 remedies, (29) 556.
 reproduction in, (32) 351.
 tenella, notes, (40) 64.
Galesus silvestrii, parasitic on fruit flies, (31) 456.
Galinisoga parviflora, studies, (33) 534.
Galium—
 aparine, notes, (29) 144.
 spp., competition on different soil types, (40) 424.
Gall—
 bladder infections, studies, (36) 778.
 formation in plants, (37) 26.
 insects and their relations to plants, (39) 664.
 midges—
 adaptation in, (31) 155.
 American, feeding habits, (26) 860.
 in New England States, (30) 253.
 new species, descriptions, (26) 860.
 notes, (27) 57.
 of New York, (34) 752.
 of north of England, (39) 866.
 studies, (28) 455; (30) 657; (33) 253; (40) 163.
 mites, injurious, notes, (32) 651.
 pod-shaped, description, (30) 251.
 sickness, *see* Anaplasmosis.
 wasps, type species, (40) 862.
 weevil, rigla, notes, (27) 53.
 weevils injurious to crucifers, (33) 648.
Gal-lamziekte, paper on, (29) 476.
Galleria mellonella, *see* Bee moth, and Wax moth
Gallflies—
 of Germany, (31) 157.
 parasites of, (28) 456.
 studies, (26) 361.
Gallic acid—
 effect on fungi, (28) 444.
 utilization by plants, (36) 329.
Gallinaceae—
 female, secondary male sex characters in, (31) 572.
 secondary sex characters in, (26) 774; (28) 877.
Gallinae, secondary sex characters, changes in, (33) 272.
Gallinules, North American, distribution and migration, (32) 55.
Gallogen, nature and use, (26) 580.
Gallowaya pini, notes, (31) 348.
Galls—
 artificial production, (38) 426.
 Chinese, notes, (38) 764.
 fungus, storage of reserve materials in, (28) 429.
 insect—
 descriptions, (39) 868.
 formation, (34) 557.
 morphology and biology, (29) 353.
 notes, (31) 155.
 of America, key, (40) 554.
 of Java, (34) 549.
 of Ohio, (32) 557.
 uses, (39) 154.
 of Germany, (31) 157.
 Java, (38) 259.
 North America, (27) 460.

Galls—Continued.

- of plants in Europe, (30) 852.
- plants, textbook, (26) 242.
- Gallus** and **Phasianus** hybrids, sex organs of, (28) 877.
- Gamasid** sp., notes, (28) 457.
- Gamburus stokesii** n.sp., description, (28) 162.
- Game—**
 - and fish laws of Massachusetts, (26) 59.
 - and fish laws of Michigan, (26) 59.
 - animals, treatise, (33) 77.
 - as a reservoir of human trypanosomiasis, (34) 187.
 - conservation, (38) 555.
 - diseases in British East Africa, (30) 576.
 - diseases, notes, (26) 373.
 - in California, (31) 846.
 - laws, (40) 54, 751.
 - laws—
 - and regulations of Alaska, (26) 854.
 - for 1911, (26) 245.
 - 1912, (28) 853.
 - 1913, (30) 52.
 - 1914, (32) 244.
 - 1915, (34) 157.
 - 1916, (36) 151.
 - 1917, (38) 456.
 - handbook, (32) 150.
 - of Alaska, (36) 653; (40) 751.
 - California, (26) 339.
 - New Jersey, (27) 856.
 - New York, (28) 248.
 - Pennsylvania, (27) 355; (34) 650.
 - United States and Canada, handbook, (30) 153.
 - Washington, (27) 254.
 - West Virginia, (26) 854.
- legislation, historical summary, (27) 52.
- plague bacterium, opsonic power of serums against, (27) 285.
- preserves, National, (28) 56.
- protection—**
 - and propagation, (32) 447.
 - and propagation in America, handbook, (30) 153.
 - in Alaska, (28) 56, 553.
 - in Pennsylvania, (28) 155.
 - officials and organizations, (28) 56; (29) 852.
- putrefaction of, (34) 163.
- wild, relation to trypanosome diseases, (30) 781.
- Gametes**, reduplication of terms in series of, (30) 328.
- Genetic** coupling as a cause of correlations, (27) 769.
- Ganaspis—**
 - hookeri n.sp., description, (30) 661.
 - n.sp., notes (29) 652.
- Ganders**, reproductive organs of, (26) 876.
- Gandul** as a cover crop, (34) 736.
- Ganeshkhind** Botanical Garden, (35) 643.
- Gangrene—**
 - gas, serum therapy, (40) 83, 84, 331, 884.
 - gas, treatment, (34) 383; (37) 377; (39) 885.
 - of the lungs, spirochetes of, (26) 581.
- Ganoderma tumidum**, notes, (35) 550.
- Garbage—**
 - analyses, (29) 823.
 - analyses and fertilizing value, (36) 728.
 - as source of alcohol, (37) 590.
 - burners, concrete, description, (30) 790.
 - disposal, (28) 574; (34) 790.
 - disposal in—
 - Alaska, (31) 360.
 - Europe, (30) 512.
 - Toronto, (27) 219.
 - fertilizers from, (33) 219.
 - fertilizing value, (29) 129.
 - for forests, (33) 343.
 - for pigs, (38) 274, 372; (40) 279, 778.
 - household, feeding stuffs from, (34) 466.
 - machine for grinding, (27) 521.
 - relation to hog cholera, (28) 587.
 - relation to house flies, (28) 255.
 - siftings, analyses, (34) 521.
 - tankage—
 - analyses, (26) 715; (32) 32.
 - availability of nitrogen in, (26) 523, 725; (35) 427.
 - composition and fertilizing value, (37) 723.
 - digestibility, (39) 171.
 - fertilizing value, (34) 219; (36) 325.

Garbage—Continued.

- tankage—continued.
 - for pigs, (32) 569.
 - nitrogen of, (40) 134.
- Garbanzos** as affected by sodium chlorid, (40) 435.
- Garden—**
 - architecture, treatise, (31) 536.
 - chafer, notes (30) 53.
 - contests for boys and girls, (28) 194.
 - cross seeds, germination tests, (27) 330.
 - crop diseases, (35) 844.
 - crop diseases—
 - and pests, treatise, (35) 835.
 - in Switzerland, (35) 546.
 - notes, (27) 644, 742; (28) 238, 450; (31) 746; (38) 257.
 - treatment, (27) 452; (38) 241.
 - crop manuring, handbook, (31) 336.
 - crops—
 - analyses, (26) 45.
 - animals injurious to, (26) 452.
 - as affected by asphyxiating gas, (37) 258.
 - culture experiments, (27) 638.
 - culture in South Australia, (35) 835; (38) 540.
 - electroculture experiments, (30) 788.
 - fertilizer experiments, (28) 236.
 - insects affecting, (26) 147; (27) 53, 344, 356, 438, 552, 644, 742; (28) 238, 450; (29) 153, 252, 853; (30) 853; (32) 448; (37) 157, 356; (38) 157, 241, 257, 459, 556, 558.
 - manuring, (37) 645.
 - of Agra and Oudh, (31) 235.
 - of Long Island, marketing, (30) 295.
 - phenological data, (33) 825.
 - slugs affecting, (26) 658.
 - spraying, (27) 144.
 - varieties, (29) 540.
 - design, bibliography, (30) 644.
 - design, lectures on, (31) 340.
 - design, treatise, (29) 42; (31) 743.
 - fla-beetles, control, (39) 767.
 - fla hopper, notes, (28) 854; (38) 154.
 - fla, notes, (28) 153.
 - furniture and accessories, treatise, (37) 746.
 - furniture, concrete, construction, (27) 645.
 - insects—see also** Vegetables, insects affecting.
 - and diseases, control, (40) 638.
 - in Louisiana, (40) 57.
 - manual, (40) 649.
 - notes, (40) 163, 256.
 - overwintering and control, (40) 245.
 - remedies, (38) 54.
 - summary of information, (38) 54.
 - irrigation, possibilities, (28) 785.
 - milliped, notes, (28) 554.
 - ornaments, treatise, (36) 644.
 - plans, treatise, (35) 841.
 - planting calendar, (38) 796.
 - seed industry in United States, (36) 535.
 - slugs, notes (29) 158; (40) 56.
 - slugs, spotted, (40) 55.
 - webworm—
 - as alfalfa pest, (39) 865.
 - notes, (28) 752.
 - remedies, (26) 250.
 - studies, (35) 158.
- Gardeners—**
 - education, (27) 200.
 - use of charcoal by, (33) 540.
- Gardenia**, studies, (37) 239.
- Gardening—see also** School gardening and Vegetable gardening.
 - and garden design, history of, (31) 239.
 - back yard, treatise, (37) 145.
 - by boy scouts in England, (26) 497.
 - clubs in Rhode Island, (31) 693.
 - cooperative, in Wisconsin, (28) 895.
 - course for high schools, (29) 193.
 - courses in negro schools, (38) 92.
 - courses in public schools, (31) 896.
 - fall preparation for, (40) 44.
 - for boys' and girls' clubs, (36) 496.
 - herbaceous, treatise, (40) 640.
 - in Australia, treatise, (35) 444.
 - city backyards, (33) 540.
 - elementary schools, (26) 597; (37) 395.
 - England and America, treatise, (26) 337.
 - France, treatise, (40) 245.
 - Iceland, treatise, (30) 119.

Gardeniag—Continued.

in Ohio and Kanawha River valleys, (31) 44.
public schools, (32) 492.
Saxony, treatise, (26) 842.
South Carolina, (27) 438.

indoor—

and under glass, treatise, (28) 838.
for schools, (35) 797.
treatise, (30) 238.

instruction in Austria, (30) 195.

manual, (26) 47, 298, 693; (34) 39, 635, 836.

market, in New York, (34) 40.

notes, (28) 91; (29) 395; (32) 289, 834; (33) 237;

(35) 643; (37) 342, 543, 795; (38) 297, 442, 643.

ornamental, *see also* Landscape gardening.

ornamental, (26) 842; (34) 238; (39) 244, 245

846; (40) 245, 340, 444, 536, 640.

ornamental—

in Europe, treatise, (30) 644.

in Florida, (35) 648.

in Oklahoma, (40) 247.

treatise, (33) 143, 442; (34) 238, 345, 535; (35)

42, 345; (36) 142, 143, 639, 643, 644; (37)

145, 346, 746.

review of American literature, (35) 746.

seaside, (40) 447.

syllabus for teachers, (33) 899.

teacher training school, in (30) 597.

teaching, (26) 94; (29) 41, 94.

textbook, (33) 898; (36) 693.

treatise, (26) 538; (27) 41, 842; (28) 538, 642; (29)

341, 441, 495, 840; (30) 40; (31) 140, 142, 340,

532, 791; (32) 232; (34) 340, 345, 833; (35) 36,

445, 741; (36) 535, 639, 743, 744; (37) 94, 145,

543, 645, 742; (38) 39, 94, 344, 842; (39) 240,

245; (40) 245, 340, 444, 536, 638.

tropical, handbook, (32) 45.

use of explosives and blow lamp in, (33) 684.

vegetable, courses in, (35) 499.

vegetable, notes (35) 341.

war emergency, bibliography, (39) 444.

window, for schools, (29) 898.

Gardens—*see also* School gardens and Vegetable gardens.

and garden design, bibliography, (32) 839.

children's home, notes (31) 791.

community, supervising, (31) 195.

fall vegetable, (37) 645.

farm, (38) 843.

farm vegetable, (35) 234.

flower, notes, (30) 645, 696.

flower, treatise, (27) 442; (33) 738.

hanging, of ancient Peru, (35) 794.

home—

in Los Angeles, (36) 294.

in the South, (32) 743.

management, (31) 44.

notes, (30) 696; (32) 494; (33) 598, 599, 696.

on cotton farms, (40) 293.

paper on, (31) 499.

preparation and management, (29) 495.

suggestions for, (34) 635.

in South Australia, (31) 836.

insects affecting, (26) 553; (29) 158; (32) 151;

(33) 746; (35) 355.

Italian, treatise, (33) 644.

laws for protection in Michigan, (33) 438.

management, (26) 539.

mountain, treatise, (34) 45.

notes, (30) 462.

planning and planting, (39) 450.

planting and care, (31) 693.

rock, treatise, (26) 139; (27) 442; (31) 536.

seeding machine for, (27) 191.

small, color grouping for, (33) 442.

small, value, (38) 792.

spraying, (32) 834.

treatise, (26) 393, 899; (31) 143, 236.

vacant lot, notes, (29) 95.

vegetable—

culture, (31) 438.

illustrated lecture, (37) 297.

notes, (26) 237; (30) 738; (31) 494; (37) 447.

on irrigated farms, (31) 336.

planting, (31) 394.

Gargaphia solani—

investigations, (33) 355.

n.sp., description, (33) 355.

notes, (35) 657.

Garget, *see* Mammitis.

Garland School of Home Making, food cost at, (31) 659.

Garlic—

bulblets, destruction in seed wheat, (31) 739.

culture, (40) 833.

culture experiments, (37) 529.

disease, description, (30) 449.

eradication, (36) 740.

flavor, removal from milk and cream, (31) 771.

food value, (36) 863.

for rice soils, (35) 338.

selection experiments, (30) 738; (32) 834.

value in the diet, (29) 664.

wild, eradication, (29) 433; (31) 739; (34) 736.

Garuleum bipinnatum, analyses and digestibility, (32) 167.

Garvanzo, varieties, (28) 533.

Gas—

analysis of small quantities, (32) 117.

asphyxiating, effect on vegetation, (37) 153, 253.

burette, description, (35) 313, 314.

burner, new Teclu, (35) 801.

cooker, description, (27) 65.

cookers, efficiency, (31) 856.

cooking, heating, and lighting, manual, (33)

753.

cooking, tests, (27) 65.

effect on plants, (30) 131, 432; (32) 524, 729;

(33) 629; (38) 28.

engines, *see* Engines, internal-combustion.

evolved, apparatus for measuring, (26) 26.

formation in milk, (35) 676.

gangrene, *see* Gangrene.

generator, description, (37) 110.

illumining, effect on—

greenhouse plants, (27) 332.

plants, (30) 131; (35) 636; (37) 726, 727.

roots, (34) 243.

infections, evolution of views on, (39) 889.

injurious to agriculture and forestry in Austria,

(37) 528.

injurious to plants, (38) 28.

lighting for farm houses, (27) 90.

lighting plants, individual, tests, (28) 788.

locomobile, description, (27) 791.

manufacture products, methods of analysis, (27)

205.

methods of analysis, (33) 207.

molecules, condensation and evaporation, (38)

511.

movement in plants, (30) 202.

mustard, pathology of poisoning by, (40) 382.

phlegmon, specific, in hogs, (34) 479.

plant, residue, fertilizing value, (39) 428.

plants and engines, suction, notes, (28) 786.

poisoning of trees by, (31) 730.

prices of in United States, (31) 558.

pump, description, (26) 893.

purification residue, utilization, (27) 219.

tractors—

for farm use, (32) 886.

for plowing, (27) 387.

testing, (28) 200.

use in cooking, (28) 167.

Gases—

analysis, apparatus for, (40) 111.

dissolved, determination in waters and efflu-

ents, (34) 410.

insoluble, from organic matter, composition

(29) 617.

measuring density, (40) 202.

methods of analysis, (27) 205.

of swamp rice soils, (30) 515; (33) 216.

Gasoline—

as vermifuge, (38) 884.

carburetion, (37) 189.

distillation, (38) 390.

effect on soils, (37) 519.

engines, tests, (27) 387, 388.

fuel value, (27) 690; (28) 384.

gas for small lighting plants, tests, (28) 788.

insecticidal value, (34) 252; (39) 762.

lighting plants, notes, (28) 291.

power, use on farms, (27) 484.

properties, testing, and specifications, (38) 389.

substitutes, tests, (32) 788.

tiller, description, (36) 891.

Gasometric determinations, technique, (40) 202.

- Gasterocercodes gossypii*—
in Brazil, (38) 54.
n. g. and n. sp., description, (32) 658.
- Gasteromyces*, new or rare species, (39) 30.
- Gastric**—
and pancreatic fat digestion in infants, (29) 365.
digestion as affected by rice diet, (28) 760.
digestion of proteins in man, (31) 161.
juice—
action on zein and gliadin, (28) 66.
antiseptic action, (35) 559.
normal secretion, (35) 664.
of constant acidity, secretion, (32) 764.
Young's studies in 1803, (40) 869.
- lipase, studies, (39) 875.
- residuum of women and men, (36) 562.
- residuum of women, phosphorus content, (39) 670.
- residuum, properties of, (34) 663.
- response to foods, (40) 269.
- secretion—
and urine ammonia, (40) 766.
as affected by bitter tonics, (32) 858.
as affected by food accessories, (26) 466.
as affected by meat extract, (31) 662.
as affected by muscular fatigue, (26) 160.
during digestion, (30) 464.
during fasting, (40) 270.
effect on chlorin supply of body, (26) 465.
following water ingestion, (30) 766.
in infants' stomachs, (40) 71.
in man, (34) 463.
mechanics of (30) 201.
relation to salivary glands, (40) 867.
- Gastritis**, parasitic—
in cattle, (28) 481.
in goats, (30) 685.
in sheep, (27) 86, 475; (28) 481; (34) 275.
- Gastrodia elata*, symbiosis with *Armillaria mellea*, (27) 224.
- Gastrodiscus aegyptiacus*, injurious to horses, (26) 384.
- Gastroenteritis**—
of cattle, (26) 678.
of sheep and goats, (37) 380.
- Gastroidea viridula*, feeding habits, (28) 553.
- Gastrointestinal**—
disturbances due to rancid butter, (26) 275.
disturbances, relation to oysters, (27) 866.
infections, hemorrhagic, in dogs, (26) 588.
lavage in dogs, (40) 482.
studies, (34) 659, 862.
- Gastropacha pini*, studies, (35) 759.
- Gastrophilus*—see also Horse bots.
duodenalis, studies, (40) 458.
equi, see *Gastrophilus intestinalis*.
haemorrhoidalis, notes, (36) 553.
intestinalis, investigations, (38) 83.
nasalis, notes, (27) 259; (40) 458.
nasalis, oviposition, (39) 362; (40) 684.
pecorum, studies, (39) 686.
spp., notes, (26) 731.
spp., relation to swamp fever in horses, (38) 689.
spp., studies, (39) 81, 156, 189, 686; (40) 458, 858.
- Gates, construction, handbook, (33) 291.
- Gayal-cattle hybrids, measurements, (27) 672.
- Gayals**—
hybridization experiments, (28) 670.
measurements, (27) 672.
- Gazella dorcas*, relation to sheep pox, (28) 183.
- Gazelle*, relation to sheep pox, (28) 183.
- Geanthemum*, description, (31) 339.
- Gear, traction, description and tests, (29) 389.
- Geasteroides texensis*, n. g. and n. sp., description, (39) 30.
- Gecko as a host of *Phlebotomus minutus*, (30) 159.
- Geese**—
ancestry, (34) 569.
as affected by antimony, (28) 73.
care and management, (32) 869; (39) 176.
disease of, notes, (39) 892.
fattening in Germany, (30) 873.
management, (40) 177.
origin and history of breeds, (27) 572.
raising, (36) 772.
serum proteins of, (32) 861.
treatise, (26) 270.
- Gelatin**—
and protoplasm, similarity in behavior, (37) 431.
antigenic properties, (39) 787.
as binder for ice cream, (36) 78.
as human food, (35) 163.
as source of bacteria in ice cream, (28) 167.
detection in sour cream, (31) 210.
determination, (26) 805.
determination of zinc and copper in, (40) 712.
distribution of nitrogen in, (36) 269.
effect on—
bacterial content of ice cream, (32) 660.
dogs, (28) 568.
ice cream, (30) 476.
feeding during inanition, (26) 465.
food preparations from, (32) 854.
hydrolysis of, (26) 22.
manufacture, (27) 763.
nitricification in soils, (26) 722.
nutritive value, (29) 868.
occurrence of arsenic in, (26) 464.
resorption in the small intestine, (26) 159.
rôle in glycogen formation, (31) 763.
roller waste, analyses, (34) 521.
swelling in polybasic acids and their salts, (38) 501, 502.
use in food products, (34) 167.
use in ice cream making, (36) 875.
use in spraying materials, (33) 450.
- Gelechia**—
cerealella, control, (39) 862.
confusella, biology and remedies, (38) 861.
gossypella, see Cotton bollworm, pink.
hibiscella, studies, (40) 754.
operculella, see Potato tuber worm.
pseudacaciella, notes, (35) 356.
tribamaciella, notes, (28) 352.
- Geilignite*, subsoling experiments with, (29) 785.
- Gels for studying protoplasmic action, (37) 325.
- General Education Board**—
activities of, (32) 896.
agricultural grants of, (31) 400.
- Generative organs**, internal, diseases of, (32) 581.
- Generic types**, determination, (35) 328.
- Genetic**—
and nongenetic factors, interrelation, (28) 531.
data, accuracy in recording, (36) 332.
relationships, studies, (33) 822, 823.
research, evolutionary aspects, (31) 727.
- Genetics**—see also Heredity and Hybridization.
application of principles of, (30) 329.
application to breeding problems, (39) 877.
at Graduate School of Agriculture, (31) 305.
bibliography, (28) 370.
cytology in study of, (26) 672.
international congress of, (31) 200.
laboratory manual, (40) 693.
modes of research in, treatise, (34) 563.
of plants, textbook, (40) 817.
present status, (27) 671.
teaching, (28) 570.
teaching in agricultural colleges, (29) 769.
textbook, (39) 671.
treatise, (28) 876; (30) 264; (31) 70.
- Geniocerus**—
n. spp., descriptions, (30) 857; (33) 360.
spp., notes, (34) 450.
- Genital glands**, endocrine rôle, (40) 871.
- Genitalia*, female, biochemistry of, (29) 66.
- Genotypical factors**, mutual influence, (36) 434.
- Genian violet**—
effect on protozoa and growing tissue, (32) 373.
toxicity and fate in the animal body, (30) 277.
- Gentiobiose**—
derivatives, rotatory powers, (37) 502.
notes, (31) 310.
- Gentiopierin*, decomposition by emulsin, (29) 505.
- Geochemistry**, data of, (26) 517; (35) 16.
- Geococcyx californianus*, food habits, (37) 156.
- "Geocol," notes, (36) 419.
- Geoderes**—
incomptus, notes, (40) 753.
melanothrix, notes, (35) 364.
- Geography**—
commercial, textbook, (28) 298.
forestry in, (27) 393.
industrial and commercial, textbook, (31) 793.
manual, (34) 599.
of Minnesota, (26) 385.

- Geography—Continued.
 of northern Florida, (33) 525.
 of world's agriculture, (38) 895.
 Geocal squamosa, notes, (29) 252; (40) 752.
 Geologic-agronomic maps—
 importance, (28) 619.
 notes, (27) 720.
 Geological—
 course for agricultural instructors, (29) 495.
 map of Montana, (40) 419.
 maps of Germany, (27) 513.
 Survey, see United States Geological Survey.
 Geology—
 agricultural, treatise, (36) 617.
 course in for agricultural teachers, (28) 795.
 engineering, treatise, (32) 784; (35) 489.
 in relation to agriculture and sanitation, treatise, (30) 212.
 of Coastal Plain of Virginia, (28) 422.
 Florida, (30) 17.
 Iowa, (28) 316.
 Neva drainage basin, (26) 621.
 New South Wales, relation to soils, (26) 216.
 north-central Texas, (29) 209.
 Northern Peninsula of Michigan, (26) 811.
 northwest Minnesota, (33) 617.
 south-central Washington, (29) 15.
 southeastern Texas coastal plain, (32) 384.
 southern peninsula of Michigan, (28) 422.
 Sulphur Spring Valley, Arizona, (30) 18; (35) 83.
 Tennessee, bibliography, (26) 812.
 the Far East, (30) 46.
 Tularosa basin, New Mexico, (32) 784.
 surface, of Michigan, (39) 512.
 Geometrid species, early stages of, (26) 758.
 Geometridae, nomenclature, (34) 651.
 Geomyces n.g. and n.spp., descriptions, (34) 226.
 Geomyzinae, synopsis, (29) 657; (30) 254.
 Geophysical stations, need of, (38) 812.
 Georgia—
 College, notes, (26) 96, 395, 694; (27) 493, 799; (28) 93, 696; (29) 697; (31) 695; (32) 395; (33) 399, 699; (34) 600; (35) 96, 397, 697; (36) 599, 796; (38) 96; (39) 95; (40) 495, 600.
 Station—
 financial statement, (27) 97; (29) 599.
 notes, (27) 493; (28) 696; (29) 300, 697; (30) 698, 796; (31) 397, 695; (32) 395, 900; (34) 295, 900; (35) 596, 697; (36) 196, 397; (39) 800; (40) 495.
 report, (33) 196; (35) 94; (37) 95.
 report of director, (27) 97; (29) 599.
 University, notes, (26) 796.
 Geothlypis beldingi goldmani n.sbsp., description, (39) 154.
 Geotropism in plants, (37) 325, 821.
 Geotrupes sylvaticus, digestive ferments of, (26) 657.
 Gephyromoeba delicatula n.g. and n.s.p., description, (32) 321.
 Geraeus perscitus, notes, (32) 658.
 Geranium—
 bacterial blight, notes, (30) 537.
 Botrytis disease, (39) 858.
 diseases, notes, (27) 752.
 leaf spot, notes, (40) 841.
 leaf spot, studies, (37) 856.
 oil industry in Nilgiris, (38) 9.
 pyrenaicum, premature fall of petals, (27) 230.
 robertianum, flowering of, (30) 29.
 rose, culture, (30) 44.
 rose, culture in Algeria, (29) 149.
 Geraniums—
 breeding experiments, (40) 840.
 cut, preservation, (31) 837.
 termites affecting, (33) 58.
 varieties, (32) 839.
 Germ—
 cells—
 as affected by poisons, (37) 370.
 experimental modification, (39) 177.
 hereditary material in, (32) 697.
 male and female, share in heredity, (39) 573.
 male, as affected by poison, (33) 368.
 middlings, analyses, (27) 170; (29) 367; (31) 467; (33) 568; (35) 562; (37) 471.
 oil meal, analyses, (31) 73, 168, 467; (33) 870.
 plasm—
 as a stereochemic system, (32) 501; (34) 111.
 as affected by environment, (28) 767.
 current conceptions, (27) 468.
 Germ—Continued.
 plasm—continued.
 experimental modification, (34) 33.
 of Oenothera as affected by chemicals, (39) 30.
 protozoan, notes, (26) 876.
 German Association of Economic Entomology, (32) 847.
 Germicides—
 comparative value in sugarhouse work, (32) 717.
 tests, (36) 177.
 Germinal continuity, law of, (28) 767.
 Germination—see also Seeds and various crops.
 review of investigations, (35) 129.
 Gerstaeckeria spp., notes, (28) 451.
 Gestation, prolonged, in suckling mice, (40) 469.
 Ghee, analyses, (33) 578, 866.
 Gherkin skins, isolation of fat from, (29) 459.
 Giant Cuzo corn, culture experiments, (28) 532.
 Giardia microti n.s.p., description, (35) 52.
 Giardiasis in rats, treatment, (40) 884.
 Gibberella—
 briosiana n.s.p., description, (27) 854.
 pulicaris, notes, (27) 50.
 saubinetii—
 notes, (38) 646.
 on sweet potatoes, (31) 544.
 studies, (39) 854; (40) 347.
 sp. on Sophora, (40) 844.
 spp., on cornstalks, (40) 49.
 Gibellula arachnophila, description, (33) 459.
 Gid disease in sheep, (39) 283.
 Ginger—
 ale, sugar substitutes in, (39) 769.
 culture experiments, (32) 227.
 culture in Philippines, (40) 231.
 culture under dry farming, (30) 435.
 ground, analyses, (32) 253.
 pungent principles, (37) 612; (39) 412, 610.
 soft rot, notes, (27) 747; (28) 241.
 tincture, composition, (26) 464.
 Gingerol, notes, (37) 612.
 Ginkgo biloba, sexual dimorphism and variation, (39) 123.
 Ginning as factor in cottonseed deterioration, (33) 833.
 Ginseng—
 Alternaria blight, description and treatment, (27) 446.
 blight, treatment, (27) 747.
 culture, (29) 639.
 culture and preparation, (35) 647.
 culture in United States, (27) 346.
 diseases, notes, (27) 649; (29) 549, 751; (30) 640; (32) 641; (34) 244.
 diseases, treatment, (35) 547.
 handbook, (27) 346.
 Phytophthora disease, studies, (31) 447; (34) 746.
 root rot, studies, (27) 247; (34) 245.
 root rot, treatment, (36) 249.
 Sclerotinia affecting, (34) 350.
 Gioddu—
 composition, (36) 674.
 effect on human metabolism, (35) 472.
 studies, (30) 276.
 Gipsy moth—
 bacillary septicemia of, (30) 54.
 caterpillars, bacterial disease, (39) 465.
 control, (26) 855; (28) 553, 556; (29) 255; (30) 654; (32) 850; (33) 57; (36) 456; (37) 55, 254, 452, 663; (39) 750, 760, 764.
 control—
 by forest utilization, (38) 145.
 by natural enemies in Canada, (35) 465.
 by parasites, (38) 159.
 in Canada, (33) 746.
 Connecticut, (35) 53.
 Massachusetts, (27) 455; (28) 643; (30) 98, 743; (33) 144; (36) 843; (37) 646.
 New England, (33) 254.
 New Hampshire, (33) 858; (35) 461.
 United States, (31) 251.
 destruction by starlings, (40) 647.
 dispersion by wind, (37) 254.
 dissemination, (28) 655.
 distribution in Canada, (38) 459.
 eggs, destruction by birds, (27) 355.
 food plants of, (33) 453.
 important natural enemy of, (26) 350.

Gipsy moth—Continued.

- in cranberry bogs, (33) 352; (36) 54; (39) 60.
 - Crimea, (33) 155.
 - Connecticut, (37) 259.
 - Great Britain, (38) 562.
 - Nova Scotia, (30) 752.
 - larvae, dispersion by wind, (33) 653.
 - larvae, dissemination of white pine blister rust by, (38) 860.
 - notes, (26) 59; (27) 356, 857; (28) 57, 155, 157, 752, 834; (29) 251, 252; (30) 549; (31) 548, 848; (33) 61; (34) 752; (35) 58.
 - parasite of, (27) 359.
 - parasites and enemies in Canada, (38) 556.
 - parasites in Maine, (37) 459.
 - parasites of, (28) 859; (30) 460; (31) 355, 652; (34) 652; (39) 662; (40) 57.
 - parthenogenesis in, (38) 261.
 - polyhedral virus, (40) 255.
 - portable insectary for, (40) 752.
 - sex development in, (32) 349.
 - tree bands for, (37) 258.
 - wilt disease—
 - dissemination, (35) 758.
 - notes, (27) 456; (28) 254, 859; (30) 755.
 - studies, (27) 659, 660; (30) 456; (33) 254.
- Girls'—**
- agricultural—
 - club champions in 1913, (30) 399.
 - clubs, formation, (28) 792.
 - competitions, (33) 196.
 - school at Berlaer, Belgium, (30) 93.
 - and boys' agricultural clubs, (28) 194.
 - and boys' clubs, notes, (28) 395.
 - and boys on the farm, (26) 299.
 - canning clubs—
 - in Kentucky, (32) 197.
 - in Mississippi, (29) 495.
 - organizing and conducting, (26) 795.
 - club work—
 - in Massachusetts, (34) 394.
 - in Nevada, (34) 899.
 - manual for rural teachers, (36) 294.
 - school credit for, (33) 799; (36) 293.
 - clubs—
 - animal husbandry course for, (35) 396.
 - food production by, (38) 795.
 - gardening for, (36) 496.
 - in Arkansas, (33) 95.
 - Canada, (38) 297; (40) 396.
 - Georgia, (33) 792.
 - Maine, (33) 697.
 - Massachusetts, (30) 597; (31) 598.
 - Michigan, (30) 794.
 - Michigan, projects for, (33) 792.
 - Nebraska, (32) 598.
 - Oklahoma, (36) 94.
 - rural schools, (32) 693.
 - Utah, (31) 693.
 - instructions for, (31) 298, 793, 794.
 - material supplied to, (33) 792.
 - notes, (27) 395; (29) 93, 394, 395; (33) 195, 599, 895.
 - organization, (31) 499; (32) 596, 692; (34) 793.
 - contest clubs, dangers in, (33) 296.
 - contests in Rhode Island, (28) 299.
 - country, life of, (34) 290.
 - demonstration work in the South, (26) 598; (32) 492.
 - domestic science clubs in Pennsylvania, (31) 393.
 - educating for the home, (29) 362.
 - field-crop competitions, (34) 493.
 - gardening clubs in Rhode Island, (31) 693.
 - home economics instruction for, (33) 298.
 - homemakers clubs for, (33) 299.
 - industrial—
 - and vocational training for, (28) 499.
 - clubs in Oregon, (31) 393; (32) 394.
 - clubs in rural schools, (31) 297.
 - pig clubs in Louisiana and Georgia, (31) 598.
 - poultry clubs, organization, (28) 599; (30) 395.
 - science work for, (36) 194.
 - sewing clubs, notes, (29) 395.
 - tomato clubs, notes, (28) 796.
 - training for house servants, (31) 490.
 - vocational training in New York, (40) 597.
 - Glacial deposits of Netherlands, studies, (26) 813.

Glaciation—

- effect on agriculture, in Ohio, (32) 317.
 - in Indiana, (29) 815.
 - Glaciers, Alpine, variations, (38) 812.
 - Gladioli, evolution, (34) 237.
 - Gladiolus—
 - colvilli, bacteriosis of, (29) 844.
 - dry rot, studies, (39) 758.
 - hard rot disease of, (36) 453.
 - history, culture, and hybridization, (36) 643.
 - smut, notes, (26) 446.
 - varieties, (37) 345.
 - Gland extracts, action on tubercle and other acid-fast bacilli, (38) 81.
 - Glanderous serum, reversible precipitation, (37) 377.
 - Glanders—
 - bacillus—
 - agglutination by normal horse serum, (28) 286; (29) 677.
 - as affected by calcium hypochlorite, (40) 478.
 - morphology and biology, (31) 579.
 - organism resembling, (26) 279.
 - chronic, infectiousness, (26) 173.
 - control in—
 - Austria, (37) 781.
 - Canada, (26) 376; (31) 79.
 - England, (36) 275.
 - Hawaii, (34) 477.
 - Kurland, (27) 285.
 - Minnesota, (27) 77.
 - New York, (34) 185, 782.
 - Prussia, (33) 387.
 - detection, (37) 79.
 - diagnosis, (26) 177, 279, 376, 578, 582, 676, 679, 882, 883; (27) 81, 183, 284, 285, 578, 681, 782, 883, (28) 286, 376, 478, 479, 480, 587, 779, 880; (29) 284, 499, 677; (30) 280, 480, 686, 881; (31) 83, 282, 380, 480, 579, 879; (32) 81, 180, 374, 580, 682, 779; (33) 180, 387, 479, 480, 773, 774; (34) 81, 185, 276, 576, 677, 781, 782; (35) 780; (36) 180, 382, 480, 579, 676, 880; (37) 689, 878; (38) 284, 886; (40) 84, 186, 288, 583, 680, 779, 885.
 - diagnosis, intrapalpebral test, (36) 80.
 - disease of mules simulating, (28) 887.
 - dissemination by public drinking troughs, (29) 499.
 - eradication, (27) 576; (34) 677.
 - eye test in, (26) 582.
 - fluctuations of agglutination titer in, (30) 480.
 - immunization, (27) 379, 782; (28) 286, 779; (30) 481, 578; (31) 83; (35) 75; (36) 679.
 - in Brazil, (38) 784.
 - Connecticut, (34) 274.
 - England, (32) 271.
 - Germany, (28) 583.
 - Great Britain, (31) 177; (34) 382; (36) 378.
 - Hawaii, (31) 177.
 - Prussia, (27) 181.
 - Washington, (37) 477.
 - nodules and parasitic nodules, differentiation, (32) 374.
 - notes, (26) 373; (27) 475; (39) 283, 387; (40) 86, 676, 778, 880.
 - of the lungs in horses, (27) 685.
 - outbreak in Waipio Valley, (28) 779.
 - outbreaks in England, (38) 282.
 - papers on, (34) 576.
 - prophylaxis, (34) 782.
 - sero-diagnosis, (27) 77, 183, 378, 478.
 - serum, preparation, (38) 379.
 - spread by open water troughs, (26) 782; (27) 77.
 - treatment, (26) 578; (27) 183; (28) 79; (36) 678.
- Glandular—**
- cells, function of (28) 272.
 - diseases, immunization, (35) 574.
- Glass—**
- ground, effect of ingestion, (40) 385.
 - vessels, permanent marking, (40) 609.
- Glassware—**
- chemical, tests, (38) 309.
 - laboratory, drying rack for, (36) 805.
- Glaucoclepis n.g. and n.sp., description, (37) 564.**
- Glaucoclepis—**
- action of fertilizer salts on, (35) 326.
 - as source of potash, (39) 218, 219.
 - extraction of potash from, (27) 323.
 - sand, fertilizing value, (29) 625.

Glaucum corniculatum, analyses, (33) 466.
Glaze, notes, (38) 511.
Glecoma hederacea—
 betains in, (27) 204.
 poisoning of horses by, (32) 278.
Glialin—
 alcohol solution portion of, (29) 201.
 as affected by gastric juice, (28) 66.
 as affected by heat, (26) 866.
 copper compounds of, (37) 9.
 determination in flour, (27) 111, 498; (31) 208.
 determination in wheat, (26) 22.
 effect on wheat gluten, (26) 67.
 hydrolysis products of, (33) 867.
 in flour, quality, (27) 112.
 lysine content, (29) 408; (31) 559.
 modifications in, (29) 608.
 nutritive value, (31) 264; (35) 368.
 of wheat and barley hordein, relationship, (31) 377.
 proteoses, physiological action, (34) 71.
 role in nutrition, (28) 864.
 separation from nongliadin proteins, (34) 610.
 studies, (29) 201.
 wheat, hydrolysis, (28) 607.
Gliocladium spp. in Norway, (31) 327.
Gliptocranium gasteracanthoides, notes, (38) 566.
Globin caseinate, antigenic properties, (32) 79.
Globulin—
 determination in milk, (31) 114.
 from cotton seed, (36) 804.
 of buckwheat, (39) 201.
 serum, density and solution volume, (31) 804.
Globulins—
 determination and purification, (26) 709.
 in bacterial infection and immunity, (36) 778.
 of the jack bean, (40) 308.
 plant, preparation, (35) 9.
Gloeopeziza turricula n.sp., description, (33) 447.
Gloeosporium—
 affine, notes, (26) 450.
 alborubrum, notes, (34) 540; (35) 251; (37) 253; (38) 53, 759.
 ampelophagum, notes, (26) 550; (33) 845; (37) 52, 453.
 ampelophagum, treatment, (39) 753.
 amygdalinum, notes, (36) 453.
 and *Colletotrichum* on chili, identity, (34) 50.
 camphorae n.sp., description, (37) 844.
 caryae, notes, (28) 449.
 caulivorum—
 description and treatment, (39) 754.
 notes, (36) 748.
 on red clover, (34) 155; (35) 546.
 coffeanum, notes, (38) 51.
 concentricum, notes, (37) 551.
 conviva n.sp., description, (37) 557.
 darlingtoniae n.sp., studies, (30) 351.
 elasticae, notes, (38) 153.
 eunymmicolum n.sp., description, (39) 758.
 fructigenum—
 description and treatment, (30) 50.
 forms of, (28) 51.
 notes, (30) 147; (34) 247.
 studies, (26) 849.
 gossypii, growth in plant decoctions, (37) 728; (38) 524.
 heveae, notes, (37) 253.
 kaki n.sp., description, (27) 251.
 kaki, notes, (37) 656.
 lagenarium, notes, (34) 843.
 limetticolum n.sp., description, (28) 749.
 lindemuthianum, notes, (39) 249.
 lindemuthianum, treatment, (32) 843; (33) 846.
 lunatum, notes, (34) 543.
 lunatum, studies, (27) 352.
 lupinus n.sp., description, (28) 648.
 malicorticis, notes, (27) 249, 448; (29) 153; (31) 53.
 malicorticis, perfect stage, (27) 649.
 mangiferae, notes, (27) 750; (34) 442; (35) 153; (37) 755, 838.
 manihotis, notes, (34) 843; (37) 551.
 musarum, notes, (29) 547.
 musarum, treatment, (38) 547.
 n.spp., descriptions, (37) 748.
 nervisequum—
 notes, (27) 747; (32) 347; (37) 550.
 on sycamores, (38) 646.
 relation to *Gnomonia veneta*, (30) 351.
 epstis, notes, (36) 348; (39) 453.

Gloeosporium—Continued.
 polystigmaticum n.sp., description, (29) 752.
 ribis, notes, (30) 246.
 rufomaculans, notes, (40) 47.
 s.p., notes, (26) 841; (28) 153, 241; (31) 55.
 s.p. on apples, (34) 644.
 s.p. on bananas, (34) 841.
 s.p. on cassava, (34) 841.
 s.p. on coconuts, (34) 242.
 s.p. on horse chestnut shoots, (36) 52.
 s.p. on rubber, (33) 449.
 s.p. on shade trees, (38) 249.
 s.p. on spice bush, (31) 844.
 s.p. on tomatoes, (33) 445; (34) 841.
 s.p., relation to damping off of truck crops, (35) 844.
 spp. as affected by temperature, (34) 541.
 spp. in Barbados, (36) 541.
 spp., notes, (28) 444.
 spp., studies, (26) 749; (37) 245.
 taxicolum, notes, (26) 853.
 thalictri, notes, (26) 341.
 tilifae, notes, (37) 550.
 tiliaecolum, notes, (35) 251.
 venetum—
 life history and treatment, (38) 853.
 notes, (33) 350; (40) 53.
 perfect stage, (38) 252.
 studies, (36) 347.
 treatment, (33) 54.
Glomerella—
 anthurii n.sp., description, (37) 550.
 as affected by temperature, (32) 749; (34) 541.
 cingulata—
 description, (30) 453.
 notes, (31) 641; (33) 348; (34) 247.
 on apple, (39) 251, 551.
 on fig, (39) 757.
 on pecan, (39) 553.
 relation to apple rot, (33) 348.
 relation to temperature and rainfall, (36) 649; (38) 454.
 utilization of pentoses by, (34) 351.
 vaccinii, treatment, (39) 749.
 wintering over, (33) 148.
 (*Colletotrichum*) lindemuthiana, notes, (31) 542.
 culture strains of, (26) 645; (30) 745; (31) 843.
 gossypii—
 description and treatment, (29) 751.
 growth in plant decoctions, (37) 728; (38) 524.
 nitrogen fixation by, (37) 129.
 notes, (28) 444, 647; (35) 455; (36) 541; (39) 52.
 relation to weather, (40) 154.
 strains of, (30) 538.
 rufomaculans—
 as affected by cold, (34) 538.
 description, (29) 450.
 enzymes produced by, (29) 648.
 host relations, (27) 648.
 notes, (27) 547; (28) 444; (29) 650; (34) 646; (35) 351.
 on sweet peas, (32) 446.
 relation to temperature, (33) 545.
 studies, (37) 155.
 vaccinii, notes, (39) 55.
 spp., relation to sweet pea anthracnose, (26) 751.
 studies, (28) 545.
 variations in, (26) 645.
Gloomy scale, remedies, (26) 654; (27) 55.
Glossina—see also Tsetse flies.
 morsitans—
 development of *Trypanosoma rhodesiense* in, (28) 255.
 dipterous parasite of, (31) 63.
 transmission of trypanosomes by, (27) 783 884.
 trypanosomes in, (30) 781.
 palpalis, development of *Trypanosoma gambiense* in, (26) 150.
 palpalis, host of *Trypanosoma gallinarum*, (27) 787.
 parasites of, (39) 566.
 spp., transmission of *Trypanosoma* spp. by, (26) 151.
Glossitis, gangrenous, in horses, (38) 178.
Glossonotus sp., notes, (26) 148

- Glover's scale, notes, (26) 149.
 Glucal, physiological action, (35) 665.
 Glucinum—
 assimilation by *Aspergillus niger*, (31) 224.
 effect on *Aspergillus* spp., (29) 825.
 utilization by fungi, (29) 28.
 α-Glucoheptose, hexacetates of, (36) 12.
 Glucolytic ferment of yeast, (27) 765.
 Glucophose, notes, (30) 203.
 Glucosamin—
 hydrochlorid as a source of nitrogen, (29) 827.
 hydrochlorid, preparation, (34) 803.
 isomeric pentacetates of, (36) 202.
 Glucosazone reaction, studies, (39) 414.
 Glucose—
 absorption in the intestines, (28) 763.
 and maltose, comparison, (31) 762.
 as affected by hydrogen peroxid, (28) 202.
 as dressing in veterinary surgery, (36) 178.
 assimilation, limit, (35) 369.
 beta, preparation, (37) 410.
 bromination as affected by catalyzers, (40) 613.
 commercial, effect on white rats, (35) 163.
 composition and use, (29) 460.
 confectioners', analyses, (29) 867.
 decomposition by *Bacillus coli communis*, (38) 709.
 detection in presence of lactose, (28) 205.
 detection of arsenic in, (39) 113.
 determination, (26) 709; (40) 312.
 determination in—
 juices, (28) 613.
 presence of other substances, (29) 716.
 urine, (38) 713.
 effect on—
 ammonia production and use in killed plants, (28) 327.
 autolysis, (31) 763.
 cooking temperatures of candy sirups, (32) 762.
 germination of seeds, (27) 201.
 protein catabolism, (29) 663.
 respiration of seeds, (27) 729.
 secretion of diastase by fungi, (31) 13.
 soil nitrogen, (35) 218.
 fatty acid esters of, (29) 269.
 formation—
 by amylases, (36) 315.
 from body proteins, (33) 868; (34) 366.
 in plants, (35) 413.
 history of, (26) 106.
 humification, (38) 26.
 in lymph and blood, (39) 670.
 industry in United States, (30) 711, 791.
 limit of assimilation, (28) 262.
 manufacture, (39) 113.
 manufacture from vine shoots, (26) 613.
 metabolic relationship of proteins to, (33) 261.
 methods and results of analysis, (35) 316.
 preparation from corncobs, (40) 17.
 properties, (32) 109.
 relation to polyneuritis gallinarum, (29) 865.
 resorption in small intestine, (29) 268.
 separation from lactose and galactose, (26) 202.
 sirup, analyses, (34) 660.
 solutions, turbidity, (36) 808.
 standards for, (29) 867.
 toxicity, (28) 661.
 d-Glucose, studies, (37) 109.
 Glucosid alcohols, synthesis, (29) 505.
 Glucosids—
 and carbohydrates, treatise, (28) 710.
 as producers of hydrocyanic acid, (29) 713.
 biochemical detection, (29) 509.
 effect on germination of seeds, (33) 825.
 formation by plants, (36) 329.
 indigo-yielding, physiology of, (35) 333.
 occurrence in pears, (26) 327.
 pigment-producing substances from, (30) 129.
 preparation and detection, (30) 202.
 production from glycol and glycerol, (30) 502.
 relation to anthocyanin in flowers, (31) 427; (33) 427.
 Glucosylase, new, notes, (32) 502.
 Glue—
 factory—
 refuse, analyses, (34) 521.
 sludge, fertilizing value, (28) 734.
 waste as source of lime, (38) 22.
 eather as a cattle feed, (37) 171.
 Glugea—
 polymorpha, notes, (27) 456.
 spp., notes, (30) 362.
 Glutamic acid as a source of ammonia, (29) 723.
 Glutamin—
 assimilation by plants, (26) 32.
 distribution in plants, (30) 129.
 in germinating corn, (35) 202.
 grape leaves, (27) 731.
 stachys tubers and citrus leaves, (26) 107.
 sugar beets, (28) 810.
 sugar cane juice, (30) 15.
 Glutaminic acid—
 heat of combustion, (26) 160.
 in tomatoes, (27) 364, 634.
 preparation and determination, (27) 406.
 Glutelin, lysin content, (31) 559.
 Gluten—
 absorption of moisture by, (37) 363.
 as affected by heat, (26) 866.
 biolytic cleavage of, (31) 711.
 bread, analyses, (26) 464.
 content of flour, factors affecting, (32) 63.
 determination, (37) 617.
 determination in cereal products, (29) 799.
 determination in flour, (27) 498.
 dry, composition, (27) 807.
 dry, relation to protein content of flour, (27) 807.
 feed—
 analyses, (26) 72, 165, 362, 568, 665, 714, 768, 873; (27) 68, 170, 171, 570, 669, 670, 774, 872; (28) 265, 364, 464, 465, 669; (29) 271, 367, 467, 570, 665, 769; (30) 67, 68, 169, 565; (31) 73, 168, 366, 467, 564, 663; (32) 169, 259, 568, 667, 862; (33) 71, 371, 568, 665; (34) 169, 371, 467, 566, 665; (35) 374, 562, 867; (36) 65, 167, 268, 667, 765; (37) 471, 767; (38) 369, 376; (39) 270, 370, 773; (40) 72, 470, 571.
 and meal, analyses, (39) 167, 270, 370; (40) 72, 470, 571.
 and meal, digestibility, (39) 171.
 ash analyses, (29) 861.
 definition, (28) 98.
 efficiency for milk production, (36) 872.
 for milk production, (40) 572.
 palatability and nutritive value, (38) 66.
 proteins, efficiency for milk production, (36) 671.
 feeds, paper on, (28) 74.
 flour, amino acid in, (33) 665.
 flour, examination, (26) 867.
 foods, examination, (28) 357.
 inheritance of imperfections in, (27) 500.
 meal—
 analyses, (27) 570; (28) 265, 364, 669; (29) 467, 769; (30) 67, 68, 169, 467, 868; (31) 73, 564, 663; (32) 259, 667; (33) 71, 371, 759; (35) 562, 867; (36) 167, 268, 667, 765; (38) 665; (39) 167, 270, 370.
 definition, (28) 98.
 digestibility, (39) 171.
 feeding value, (26) 468.
 fertilizing value, (34) 520.
 for laying hens, (39) 578.
 physical properties, (40) 762.
 variations, (32) 559; (35) 108.
 wheat, amino acid in, (33) 665.
 wheat, colloidal swelling, (34) 111.
 wheat, hydrolysis, (28) 607.
 Glutenin—
 as affected by heat, (26) 866.
 effect on wheat gluten, (26) 67.
 lysin content, (31) 559.
 Glucose—
 and glucoside in molasses, (40) 313.
 determination, (37) 617.
 determination in molasses, (39) 206.
 notes, (36) 609.
 Glyceria maritima, growth in presence of salt, (33) 222.
 Glycerids—
 low molecular, of fatty acids in milk fat, (33) 808.
 of fats and oils, studies, (32) 801.
 of milk fat, (31) 804; (40) 608.
 Glycerin—
 action of symbiotes on, (40) 464.
 as source of carbon for citromyces, (30) 805.
 bacterial dehydration, (35) 163.
 detection in cider vinegar, (36) 299.

- Glycerin—Continued.
determination, (26) 709; (40) 904.
determination in—
fats and soaps, (26) 411.
meat products, (29) 800.
wine, (34) 506.
effect on—
activity of invertase, (38) 502.
alcoholic determinations of beverages, (34) 661.
growth of peas, (31) 522.
plant respiration, (26) 628.
germicidal power, (34) 876.
hemolytic action, (36) 276.
humification, (38) 26.
purity, (27) 208.
toxicity, (38) 283.
- Glycerol—
as affected by hydrogen peroxid, (29) 309.
as source of carbon for molds, (30) 226.
chemical technology of, (29) 413.
determination, (26) 114.
determination in—
fats, (28) 313.
soap lyes, (40) 712.
wine, (32) 20.
effect on solution of casein by sodium hydroxid, (36) 108.
esters, effect on tubercle bacilli, (27) 681.
- Glycerophosphoric acid, hydrolysis by dilute acid and alkali, (31) 805.
- Glycerotriphosphoric acid of Contardi, (31) 709.
- Glycin—
action upon esters, (31) 711.
assimilation by plants, (26) 32.
canker of, (26) 845.
effect on action of alcohol on plant cells, (34) 333.
effect on ethyl butyrate, (28) 409.
metabolism, studies, (39) 873.
nitrification rate, (32) 124.
significance in intermediary metabolism, (40) 71.
- Glycine—
hispidia, effect on nitrogen content of soils, (31) 733.
soja, anatomical structure, (31) 314.
- Glyciphagus—
cadaverum, notes, (40) 855.
domesticus, fumigation, (39) 161.
- Glycocol—
as antidote for benzoic acid poisoning, (32) 165.
as source of ammonia, (29) 723.
decomposition by mold fungi, (29) 28.
effect on baking quality of flour, (26) 356; (30) 555.
effect on plant growth, (34) 31.
formation in the body, (29) 63.
ingested, metabolism rate of, (33) 755.
ingestion, effect on metabolism, (38) 867.
isolation from oat farina, (31) 309.
occurrence in sugar cane juice, (30) 15.
- Glycocyamilglycylglycin, synthesis, (36) 202.
- Glycogen—
and diastase of animal tissues, correlation, (30) 204.
available, in the human body, (31) 466.
content of liver after protein feeding, (31) 465.
content of liver of tumor-bearing rats, (30) 477.
formation in yeast cells, (28) 631.
from different sources, comparison, (29) 166.
heat of combustion, (26) 160.
hydrolysis by diastatic enzymes, (29) 166.
occurrence in phanerogams, (27) 133.
relation to hemoglobinemia, (26) 683.
solutions, effect on plant transpiration and growth, (31) 625.
sources of, (31) 763.
storage in the animal body, (27) 576.
- Glycol—
as source of carbon for molds, (30) 226.
determination, (26) 709.
- Glycolic acid, decomposition by sunlight, (30) 431.
- Glycolytic power, determination, (29) 663.
- Glycoproteins, antigenic properties, (33) 773.
- Glycosuria—
and allied conditions, treatise, (30) 277.
and diabetes, treatise, (32) 474.
immunity, studies, (30) 277.
- Glycuronic acid, isolation from sugar beets, (26) 307.
- Glycyrrhiza lepidota, geographical distribution, (26) 335.
- Glyoxylic acid, transformation into formaldehyde, (40) 507.
- Glypta—
brevis n.s.p., description, (35) 262.
evetriae n.s.p., description, (38) 565.
- Glyptoscelis alternata, notes, (35) 364.
- Glyptotermes satsumensis n.s.p., description, (35) 255.
- Gmelina arborea, notes, (29) 443.
- "Gnamma holes," formation, (30) 511.
- Gnamptodon nepticulae n.s.p., description, (34) 456.
- Gnathostomum hispidum, physiological investigations, (31) 679.
- Gnathotrichus spp., notes, (32) 552.
- Gnats—
bloodsucking, relation to surra, (31) 777.
buffalo, relation to pellagra, (28) 853.
notes, (28) 156.
- Gnomonia—
caryae n.s.p., description, (28) 449.
- iliau—
n.s.p., description, (28) 53.
notes, (29) 846.
on sugar cane, (40) 157.
- leptostyla, description, (30) 151.
- n.s.p. on pecan, (39) 459, 553.
- on cherry leaves, (37) 246.
- on eggplant, (37) 752.
- psidii, notes, (29) 243.
- rubi, notes, (34) 55.
- veneta, notes, (34) 56.
- veneta, parasitic on sycamore, (30) 350, 751.
- Gnomoniella albomaculans n.s.p., description, (27) 548.
- Gnorimoschema heliopa, studies, (40) 62, 854.
- Goat—
diseases, nature and treatment, (34) 383.
industry in Germany, (30) 170.
industry in Union of South Africa, (31) 268.
manure, analyses, (38) 23.
manure, fertilizing value, (34) 219.
serum, proteins and antitoxins in, (35) 574.
sucker, long-tailed, synopsis of races, (35) 252.
wireworm, life history, (29) 476.
- Goats—
ancestry, (34) 372.
- Angora—
care and management, (34) 380.
industry in Northwest, (27) 278.
notes, (28) 170; (31) 75.
value in land clearing, (28) 573.
- birth data, (27) 71.
- breeding and care, (33) 71; (38) 878.
- breeding and management in Germany, (34) 265.
- breeding experiments, (28) 370; (35) 869.
- breeding in Philippines, (30) 869.
- cacti for, (33) 70.
- care and management, (28) 173; (34) 270.
- clearing land with, (26) 51; (32) 261.
- determination of age, (32) 866.
- diagnosing time of parturition, (31) 876.
- digestion experiments, (29) 373.
- factors affecting pulse rate, (28) 768.
- feeding experiments, (26) 568, 574; (28) 775; (30) 473; (31) 71.
- Grenada, description, (33) 470.
- growth of, (30) 467.
- heredity in, (27) 874.
- immunization against—
anthrax, (31) 82.
gangrenous mammitis, (30) 83.
Malta fever, (26) 183.
tuberculosis, (26) 85.
- in British Museum, (30) 767.
- Germany, (33) 296.
- Guam, (32) 767.
- Philippines, (26) 666.
- Spain, (30) 470.
- inbreeding experiments, (28) 370.
- injury due to grazing, (29) 543.
- involution of uterus, (27) 786.

Goats—Continued.

- malformations of genital organs, (28) 770.
- management and use, (27) 278.
- measurements of skeleton, (28) 667.
- metabolism cage for, (26) 268; (27) 71.
- milch—
 - care and management, (34) 380.
 - in California, (38) 177.
 - records, (34) 270.
 - summary, (38) 878.
- mountain—
 - host of spotted fever tick, (26) 64.
 - protection in Alaska, (36) 791.
 - relation to spotted fever, (31) 160.
- mucous membrane of, (26) 480.
- newborn, weights, (32) 862.
- of Catanduanes Islands, (27) 771.
- central and eastern Tennessee, (35) 170.
- Nedjed in Arabia, (26) 268.
- Tunis, description, (27) 571.
- on farms in United States, (31) 167.
- origin and development of breeds, (33) 171.
- origin and distribution, (31) 564.
- paunch movement in, (27) 68.
- pine needles for, (28) 768.
- pure-bred, in Montana, (36) 470.
- Pyrenean, notes, (28) 874.
- resistance to trypanosomiasis, (26) 84.
- resistance to tubercle bacilli, (30) 783.
- serum hemolysis in, (27) 476.
- skull and head measurements, (28) 767.
- slaughtering on the farm, (35) 317.
- sterility in, (26) 167.
- structure of third stomach, (28) 271.
- susceptibility to tuberculosis, (26) 178.
- treatise, (37) 769.
- worms infesting, (37) 779.
- Goats' rue, description and control, (37) 142.
- Goatskin trade of Red Sea region, (29) 69.
- Gobaishia n.g. and n.sp., description, (38) 857.
- Godetia gracilis n.sp., description, (34) 336.
- Goes sp., notes, (38) 363.
- Goessmann, C. A., biographical sketch, (38) 810.
- Goiter—
 - exophthalmic, metabolism in, (35) 371.
 - in newborn animals, (39) 187.
 - in rats, notes, (31) 451.
 - in swine, (40) 185.
 - relation to iodine content of food, (35) 762.
- Goitrous condition in pigs, (39) 187.
- Gold chlorids, effect on starch ferments, (27) 109.
- Goldenrod—
 - canyon, notes, (29) 441.
 - gall insects affecting, (35) 55.
 - poisoning stock, (39) 184, 787.
 - western, poisoning of sheep by, (37) 482.
- Goldenseal—
 - Botrytis blight, (39) 853.
 - culture, (32) 143, 436.
 - culture and preparation, (35) 647.
 - handbook, (27) 346.
 - resistance to root knot nematode, (31) 345.
- Goldfinches, destruction of grain aphids by, (29) 452.
- Goldfish, breeding, (28) 637.
- Golf courses—
 - sabirrigation and drainage of, (31) 889.
 - turf for, (37) 146.
- Gomolya, bacterial flora of, (26) 881.
- Gomphoparcus fruticosus, bast fibers of, (27) 237.
- Gomphus parvidens n.sp., description, (38) 56.
- Gonadectomy—
 - effect on growth of rats, (34) 263.
 - in relation to secondary sex characters of domestic birds, (38) 170.
- Goniatocerus—
 - anomocerus n.sp., description, (31) 554.
 - bifasciiventris n.sp., description, (37) 667.
 - eximius n.sp., description, (31) 355.
 - gibsoni n.sp., description, (33) 360.
 - gibsoni n.sp., notes, (33) 357.
 - mexicanus in Hawaii, (37) 360.
 - ornatus n.sp., description, (40) 760.
 - ovicenatus n.sp., notes, (34) 657.
 - triguttatus n.sp., description, (36) 259.
- Gonatopus—
 - contortulus parasitic on sugar beet leafhoppers, (33) 747.
 - spp., studies, (40) 265.
- Gonepteryx rhamni in New Jersey, (36) 54.

Gongylonema—

- ingluvicola, notes, (31) 287; (40) 587.
- scutatum in Argentina, (34) 478.
- scutatum, life history, (34) 783; (37) 577.
- Gonia crassicornis, notes, (29) 356.
- Goniocera enigmatica, studies, (39) 659.
- Goniocerus sp., notes, (31) 757.
- Goniocotes—
 - gigas, notes, (35) 878.
 - spp. notes, (35) 183.
- Goniodes zenauiduræ n.sp., description, (38) 761.
- Goniomyia unifasciata, parasitic on army worm, (34) 251.
- (Goniozous) cellularis—
 - notes, (29) 253.
 - parasitic on pink bollworm, (37) 667.
- Gonitis, n.sp., description, (29) 456.
- Gonocytes in fowls, investigations, (29) 874.
- Gonorrhea, rôle of specific fats in complement fixation, (39) 80.
- Goodell, H. H., biographical sketch, (26) 897.
- "Goodness of fit" tables, application, (36) 166.
- Goose—
 - fat, digestibility, (36) 860.
 - fat, digestion and absorption, (34) 257.
 - grass, notes, (29) 144.
- Gooseberries—
 - acidity, (32) 110; (37) 714.
 - aphids affecting, (27) 758; (37) 358.
 - breeding and testing in Minnesota, (40) 148.
 - breeding experiments, (32) 338; (33) 637; (36) 443; (39) 346.
 - crossing experiments, (32) 535.
 - culture, (31) 142, 441; (32) 141; (35) 41.
 - culture and marketing, (38) 844.
 - culture experiments, (28) 436.
 - culture in western Washington, (38) 298.
 - currant mite affecting, (31) 854.
 - fertilizer experiments, (38) 540.
 - for home and commercial planting, (33) 537.
 - growth as affected by meteorology, (29) 510.
 - insects affecting, (38) 843.
 - new, description, (29) 838; (31) 337; (33) 238.
 - of Germany, (33) 838.
 - preservation by freezing, (39) 344.
 - resistance to pine blister rust, (38) 151.
 - spray schedules, (39) 39.
 - transplanting experiments, (35) 37.
 - treatise, (30) 42.
 - varieties, (28) 542; (32) 538; (37) 243.
 - varieties for New York, (26) 239.
 - varieties in Oklahoma, (27) 241.
 - varieties resistant to mildew, (32) 645; (34) 834.
 - variety tests, (32) 141; (40) 340, 342.
- Gooseberry—
 - anthracnose, investigations, (33) 347.
 - aphids, studies, (31) 157.
 - bacterial disease, notes, (36) 751.
 - black currant hybrid, description, (31) 236.
 - disease in Italy, (33) 447.
 - diseases, notes, (30) 647; (39) 652.
 - diseases, treatment, (28) 449.
 - fruit fly, life history and habits, (28) 255.
 - fruit fly, notes, (29) 158; (35) 466.
 - fruit worm, notes, (36) 549.
 - gall midge, notes, (28) 62.
 - galls, notes, (30) 655.
 - industry in Ontario, (31) 142.
 - leaf spot, studies, (38) 546.
 - mildew—
 - American, notes, (26) 344.
 - American, treatment, (26) 345.
 - control in Hungary, (28) 348.
 - control in Scotland, (38) 546.
 - description and treatment, (28) 650.
 - in Baden (27) 750.
 - Europe, (27) 153, 851.
 - Great Britain, (27) 353.
 - Kent Co., England, (28) 448.
 - Sweden, (28) 850; (33) 846.
 - life history, (32) 547.
 - notes, (30) 349, 647, 845; (31) 545, 644, 749; (33) 647; (34) 649; (36) 541; (37) 550; (40) 53.
 - studies, (29) 649; (32) 445; (33) 347; (34) 241.
 - treatise, (36) 646.
 - treatment, (29) 45, 50, 249, 850; (30) 750; (31) 546, 843; (32) 547, 842; (34) 352, 747, 834, 843, 846; (35) 453, 649, 654; (36) 51, 751; (37) 351; (38) 853.

Gooseberry—Continued.
 pollen, viability, (32) 534.
 powdery mildew, notes and treatment, (28) 748.
 root rot, notes, (34) 49.
 rust, notes, (33) 647.
 sap as affected by Bordeaux mixture, (30) 647.
 sawfly, yellow, notes, (33) 659.
 Septoria leaf spot, investigations, (33) 347.
 twig disease, new, notes, (31) 749.
 wine, preparation, (27) 412.
 Goosefish, commercial possibilities, (35) 469.
 Gopher—
 pocket—
 control, (39) 153.
 description, (33) 152.
 destruction, (32) 648.
 in Iowa, (40) 546.
 life history and control, (37) 757; (40) 54.
 notes, (32) 753; (34) 651; (37) 355.
 revision, (34) 449.
 susceptibility to plague, (26) 59.
 poisons, analyses, (38) 653.
 Gophers—
 control, (39) 59.
 destruction, (30) 697; (36) 852.
 notes, (28) 450.
 Gore tares, culture experiments, (39) 126.
 Gorse as sand binder, (29) 427.
 Gortyna—
 micacea, notes, (39) 160; (40) 648.
 stramentosa, notes, (36) 456.
 Gossyparia spuria, *see* Elm scale, European.
 Gossypium—
 barbadense, analyses, (31) 863.
 brasilense var. apospermum, culture, (33) 529.
 hopi n.sp., description, (30) 37.
 irenaeum, description, (30) 37.
 spp. in Italian Somaliland, (37) 336.
 spp., leaf nectaries, (37) 727.
 Gossypol—
 chemistry of, (38) 801.
 determination in cottonseed meal, (38) 113.
 in cotton seed, (33) 311.
 notes, (37) 689.
 paper on, (32) 300.
 studies, (34) 381; (38) 685.
 toxicity, (39) 886.
 Gourd—
 fruit fly, remedies, (31) 757.
 seeds, oil from, (39) 9.
 Gourds—
 breeding experiments, (36) 838.
 inheritance studies, (39) 747.
 Gout—
 metabolism in, (37) 167.
 relation to diet, (30) 168.
 Gracilaria—
 azaleae n.sp., description, (32) 450.
 azaleae, notes, (33) 252; (39) 866.
 lespedezaefoliella, notes, (35) 356.
 sp., notes, (28) 158.
 Gracilariidae of North America, revision, (40) 652.
 Graduate—
 School of Agriculture, (31) 301.
 students as research assistants in experiment stations, (36) 102.
 Graft—
 hybrid in apples, (31) 140.
 hybrid, new, description, (36) 331.
 hybrids, connecting threads in, (30) 433.
 hybrids, description, (27) 31; (30) 740.
 hybrids, notes, (32) 726; (33) 429; (35) 437, 635; (39) 241, 447.
 stock, penetration of scion, (39) 143.
 Grafting—
 and asexual hybridization, (30) 329.
 bridge, notes, (32) 234; (34) 833.
 effect on grapes, (28) 236, 437.
 factors restricting, (31) 440.
 in plant acclimation, (35) 444.
 notes, (29) 838; (31) 740.
 stock, effect on scion, (27) 540; (28) 541.
 Grain—*see also* Cereals, Oats, Rye, Wheat, *etc.*
 active constituents of, (29) 169.
 aleurone cells as source of oil, (40) 714.
 and grain products, exports, (34) 194.
 and hay elevator, description, (30) 690.
 and wheat mixtures, nutritive deficiencies, (35) 577.

Grain—Continued.
 aphid—
 correct name, (38) 462.
 destruction by birds, (29) 452.
 English, alternate hosts, (39) 464.
 English, studies, (36) 458.
 European, control, (40) 734.
 European, notes, (28) 254; (33) 253; (36) 253.
 European, studies, (40) 649.
 new, description, (39) 62.
 notes, (26) 59; (40) 648.
 remedies, (36) 857.
 aphid, spring—
 in Texas, (40) 856.
 notes, (26) 856; (36) 755.
 outbreak in Kansas, (37) 561.
 parasite of, (32) 353.
 remedies, (34) 653.
 studies, (27) 359.
 aphid, studies, (36) 458.
 artificial drying, (33) 831.
 as affected by corrosive sublimate, (30) 242.
 as basis for credit in Russia, (31) 390.
 ash, copper determination in, (40) 807.
 beetle, control, (39) 862.
 beetle, notes, (26) 453.
 beetle, saw-toothed—
 control, (39) 862.
 in warehouses, (39) 464.
 notes, (26) 453; (27) 755; (32) 651; (34) 754.
 remedies, (27) 258; (32) 245.
 studies, (40) 855.
 binders—
 engine for, (27) 293.
 motor drawn and operated, (31) 188.
 tractor, operation, (34) 891.
 bins, concrete, construction, (37) 789.
 bins, sanitation, (37) 895.
 black rust, relation to barberries, (30) 149.
 borer, lesser, notes, (30) 655; (40) 458.
 bulk handling, (35) 693.
 buyers, ready reckoner for, (30) 342.
 Canadian, marketing under war conditions, (40) 390.
 changes in during storage, (30) 525, 639.
 cleaners, tests, (30) 292.
 cleaning and sorting machine, tests, (27) 293.
 companies, cooperative, (35) 393.
 composition as affected by soil moisture, (27) 334.
 cost of production, (32) 594.
 crops—
 culture in Wyoming, (39) 229.
 for silage, (31) 829.
 handbook, (29) 530.
 irrigation experiments, (39) 229.
 winterkilling, (40) 821.
 culture—
 experiments, (27) 32; (30) 828; (39) 229, 437.
 in southern Idaho, (36) 227.
 in the Dakotas and Montana, (38) 230.
 in western Canada, (31) 595.
 intensive, (29) 337.
 on Utah dry lands, (38) 230.
 date-of-seeding tests in Quebec, (40) 228.
 destruction by birds, (26) 855.
 destruction by cutworms, (31) 352.
 deterioration in storage and transit, (32) 200.
 deterioration on fertile soils, (29) 515.
 determining test weight, (36) 441.
 disease resistance of, measurement, (28) 546.
 diseases—
 and pests in Baden, (31) 539.
 in Württemberg, (29) 845.
 notes, (27) 848; (36) 746.
 studies, (26) 142; (30) 148.
 driers in United States, (39) 744.
 driers, tests, (34) 88.
 drills, construction and adjustment, (29) 186.
 drills, tests, (27) 892.
 "drunk bread" disease, studies, (36) 747.
 drying, (36) 634.
 drying, handbook, (27) 669.
 drying machine, description, (29) 688.
 dusts, explosibility, (32) 790.
 elevator, cooperative in Nebraska, (26) 488.
 elevators—
 accounts for, (34) 896; (35) 296.
 concrete, design, (34) 685.
 cooperative, in Iowa, (32) 593.

Grain—Continued.

- elevators—continued.
 - cooperative, in Minnesota, (36) 790.
 - cooperative, in Wisconsin, (28) 895.
 - farmers', in Ohio, (40) 592.
 - fumigation, (30) 155.
 - in Canada, (32) 894.
 - Minnesota, (34) 392.
 - Pacific Northwest, (36) 289.
 - western Canada, (33) 492; (35) 892.
- exhibits for farm and school use, (29) 93.
- exhibits, preparation, (31) 495.
- extracts, titration in presence of alcohol, (36) 299.
- fall-sown, (33) 98.
- fall-sown, in Maryland and Virginia, (36) 735.
- farming in corn belt, (34) 791.
- farming in North Dakota, (40) 735.
- farming v. live stock system, (39) 531.
- feeding values per bushel and per 100 lbs., (39) 167.
- feeds, effect on intestinal flora, (36) 664.
- fertilizer experiments, (27) 724; (28) 520; (30) 120, 731; (31) 820; (40) 429.
- fields, fire protection, (39) 393.
- flies, notes, (27) 560.
- foot rot, notes, (27) 748.
- for dry lands of central Oregon, (37) 333.
- formaldehyde treatment, (30) 697.
- freight rate on, (34) 392.
- fumigation, (39) 558.
- fungicidal treatment, (29) 326.
- germ, feeding value, (29) 263.
- germ-ripening experiments, (26) 130.
- germinated—
 - determination of proteolytic strength, (34) 318.
 - diastatic activity, (37) 208.
- germination as affected by—
 - carbon bisulphid, (27) 131.
 - disinfectants, (31) 824.
- grades of, (32) 138.
- grading and cleaning, (32) 790.
- grinding, power required for, (35) 586.
- growers' organization in Canada, (40) 688.
- hail resistance as affected by fertilizers, (30) 519.
- handbook, (27) 638.
- handling in Canada, (36) 894.
- harvesting experiments, (35) 189.
- identification of races, (38) 33.
- infection by Fusarium, (29) 244.
- inoculation, (29) 326.
- insects affecting, (26) 147; (30) 657; (31) 452; (38) 54.
- insects, life history and remedies, (30) 155.
- inspection—
 - in Canada, (33) 228.
 - Illinois, (39) 643.
 - Minnesota, (39) 644.
 - Montana, (38) 538; (40) 443.
 - South Africa, (30) 632.
- irrigating, (38) 186.
- irrigation experiments, (37) 84.
- laboratory, state, notes, (31) 633.
- leafhopper, sharp-headed, investigations, (33) 356.
- marketing, (29) 894; (37) 889.
- marketing in Pacific coast region, (26) 293.
- marketing in western Canada, (33) 492; (36) 593.
- Markets Commission of Saskatchewan, (31) 595.
- measuring for feed, (39) 834.
- mesophyll structure and function in, (36) 331.
- milodew, notes, (28) 149.
- milling, dust explosions, (39) 494.
- mixed, v. cottonseed cake for cattle, (34) 170.
- mixtures, energy values, (33) 72.
- mixtures for cows, (34) 181.
- mixtures, tests, (27) 734, 840.
- moth, control, (39) 862.
- moth, European, notes, (33) 252.
- nurse crops for clover, (40) 329.
- of French West Africa, analyses, (28) 359.
- parasitic injury to, (29) 446; (31) 50.
- pedigreed, yields in Wisconsin, (37) 438.
- pests, notes, (27) 848.
- phylogenetic studies, (32) 131.
- plant louse, English, notes, (26) 59.
- plats, harvesting, (36) 197; (38) 228.
- preparing land for, (30) 829.

Grain—Continued.

- prices—
 - and movement in 1916, (37) 492.
 - and shrinkage, (34) 336.
 - and supplies in Scotland, (40) 194.
 - in Ireland, (33) 492.
 - in Scotland, (35) 497.
 - variations in India, (28) 259.
- production—
 - and handling in Argentina, (35) 136.
 - in Great Britain and Ireland, (38) 594.
 - Saskatchewan, (27) 594.
 - Switzerland, (40) 525.
 - United States, (35) 893; (37) 595.
 - limit on fertile soils, (29) 515.
 - relation to soils, (32) 827.
- products, consumption in Europe, (38) 595.
- proteins of, differentiation, (34) 577.
- rations, restricted, for chickens, (36) 668.
- rations, testing, (27) 277.
- relation to climate, (28) 27.
- resistance to fungi, (31) 50.
- rotation experiments, (40) 331.
- rust and Fusarium, treatment, (31) 242.
- rust, infection experiments, (26) 446.
- rust spots, investigations, (26) 341.
- rusts—
 - nature and treatment, (32) 145.
 - notes, (27) 349; (30) 240; (33) 445.
 - relation to timothy rust, (31) 344.
 - treatment, (33) 431; (35) 47.
 - wintering in Bohemia, (28) 345.
- salvage, analyses, (27) 170.
- sampling and grading, (36) 836; (38) 140.
- sampling device, (33) 836.
- screenings—
 - composition and use, (34) 663.
 - digestibility, (29) 367.
 - vitality of seeds in, (29) 366.
- seed, preparation for planting, (31) 190.
- seed treatment, (27) 351; (28) 846; (33) 546; (35) 149, 845.
- seeding in furrows, (36) 831; (40) 329.
- seeds, large v. small, (38) 732.
- separators, care and repair, (40) 889.
- separators, notes, (35) 189.
- shipments and prices in Minneapolis, (32) 894.
- shipping in bulk or in sacks, (36) 289.
- shrinkage tests, (38) 840.
- small—
 - breeding experiments, (33) 332.
 - culture experiments, (27) 232; (38) 829.
 - culture for hay and pasture, (34) 630.
 - culture in Texas, (40) 729.
 - Dementschinsky method of hilling, (27) 232.
 - fertilizer experiments, (26) 424, 725; (29) 125; (30) 820.
 - hail injury to, (35) 734.
 - textbook, (35) 593.
 - transpiration in, (36) 226.
 - varieties, (26) 725; (38) 30, 829.
- smut—*see also* Cereal smuts, Smut, and specific grains.
 - inoculation on Guinea corn, (34) 644.
 - prevention, (26) 142.
 - treatment, (35) 149.
- smuts—
 - descriptions and treatment, (31) 446; (38) 249.
 - in Java, (38) 448.
 - notes, (27) 246; (33) 445; (35) 348.
 - parasitism, (31) 540.
 - studies, (33) 245; (37) 749; (38) 645.
 - treatment, (27) 246, 445; (28) 546; (29) 47, 244; (31) 344; (32) 49; (33) 431.
- spring—
 - culture in Indiana, (40) 735.
 - in Illinois, (36) 634.
 - seeding dates, (40) 332.
 - sown, (38) 796.
- sprouted, antiscorbutic value, (40) 565, 869.
- sprouted, as poultry food, (34) 294.
- stacking, (26) 833.
- stacks, measurement, (33) 831.
- Standards Act, Federal, (35) 308.
- Standards Act, regulations, (36) 442, 836.
- standards, official, (40) 39, 144.
- standing, destruction by mice, (28) 653.
- statistics, (31) 165.

Grain—Continued.

- statistics in—
 - Canada, (36) 291.
 - United Kingdom, (38) 494, 495.
 - United States, (40) 294.
 - stiffness of stems, (28) 736.
 - stinking smut, treatment, (30) 449.
 - storage, (38) 693.
 - storage and handling, (26) 538.
 - storage buildings, construction, (36) 590.
 - stored, destruction of weevils in, (33) 34.
 - stored, insects affecting, (26) 453; (28) 57, 853; (33) 59, 153; (34) 549, 754; (39) 862; (40) 855.
 - stubble, effect of different times of plowing, (33) 332.
 - sulphured, detection, (28) 807.
 - susceptibility to smuts and rusts, (35) 749.
 - tariffs of Germany, (28) 388.
 - testers, accuracy of, (31) 131.
 - testing kettle, use, (32) 138.
 - thrips, notes, (28) 452.
 - trade conference, (40) 193.
 - trade in France, history of, (31) 295.
 - trade of United States, conference on, (38) 294.
 - valuation on dry matter content, (36) 92.
 - varieties, (26) 424; (30) 333; (37) 533.
 - varieties of Utah, (40) 299.
 - variety tests, (40) 429.
 - variety tests, cooperative, (39) 134.
 - variety tests, shape and size of plats in, (31) 131.
 - vitality as affected by age, (27) 334.
 - water requirements, (32) 226.
 - weed seeds in, (26) 135.
 - winter—
 - and spring, distribution in United States, (37) 533.
 - culture, (34) 230.
 - culture in Wyoming, (38) 527.
 - culture under dry farming, (26) 828.
 - fertilizer experiments, (33) 125.
 - yield in relation to meteorology, (34) 208.
 - yield in relation to rainfall, (40) 429.
- Gram—
- acid secretion of, (34) 525.
 - as forage crop, (38) 336.
 - as green manure, (37) 824; (38) 220.
 - culture experiments, (27) 336; (29) 538; (32) 227; (37) 734, 825; (38) 433, 635; (40) 332, 523, 825.
 - culture in India, (36) 635; (39) 229, 230.
 - factors affecting cooking, (33) 556.
 - fertilizer experiments, (38) 230.
 - for pigs, (28) 264.
 - green manuring experiments, (37) 734.
 - horse, notes, (30) 233.
 - meal, analyses, (38) 572.
 - meal for pigs, (29) 873.
 - red, enzymes of, (38) 9.
 - seed position in planting, (40) 635.
 - selection experiments, (38) 635.
 - varieties, (26) 631; (30) 731; (37) 824, 825; (38) 635.
 - water requirements in India, (27) 429.
 - wilts, notes, (38) 351, 547.
- Gramma grass—
- blue, culture experiments, (30) 632.
 - blue, seeding on ranges, (30) 35.
 - botanical study, (26) 830.
 - water requirement, (32) 127.
- Gramineae—
- composition as affected by companion crop, (26) 617.
 - embryology, (30) 633.
 - first stages of development in, (28) 427.
 - mites affecting, (32) 853.
 - serological study, (31) 733.
- Granadilla as trap for fruit flies, (29) 657.
- Granadillas, insects affecting, (27) 453.
- Granaries—
- for prairie farms, (35) 690.
 - fumigation, (30) 155.
 - in relation to rural credit in Spain, (40) 389, 890.
- Granary—
- for the farm, portable, (39) 494.
 - modern, construction, (27) 590.
- weevil—
- broad nosed, fumigation experiments, (32) 650.
 - control, (27) 258; (33) 431; (39) 862.
 - in warehouses, (39) 463.
 - notes, (26) 453; (31) 57.
 - parasite of, (39) 468.

Grange—

- educational value, (28) 792.
 - movement in Canada, (35) 497.
 - work of, (30) 496.
- Granger movement, treatise, (30) 693.
- Granges in New Jersey, (38) 594.
- Granite—
- as sewage filtering material, (28) 789.
 - effect in water culture, (28) 817.
 - meal, fertilizing value, (28) 521.
- Granuloma, coecidiodal, in cattle, (40) 88.
- Granulomata, habronemic, in horses, (37) 279.
- Grape—
- anthracnose—
 - in America, (36) 545.
 - notes, (37) 453; (38) 853; (39) 356, 457, 652.
 - studies, (40) 850.
 - treatment, (28) 649; (29) 849; (31) 346; (36) 251.
 - aphid, brown, life history, (33) 857.
 - arrepollao or achaparrado, studies, (30) 150.
 - arricciamiento, notes, (28) 650, 749.
 - berry moth—
 - notes, (26) 656; (27) 57, 755; (35) 646.
 - remedies, (35) 659; (37) 852.
 - studies, (28) 453; (35) 358.
 - treatise, (34) 553.
 - berry worm, remedies, (35) 659.
 - black rot—
 - control, (39) 352.
 - description, (34) 543.
 - false, notes, (39) 457.
 - notes, (33) 149.
 - notes and treatment, (29) 349.
 - studies, (29) 849; (40) 850.
 - treatment, (27) 143; (28) 537.
 - black spot, notes, (39) 652, 753.
 - black spot, studies, (40) 850.
 - bug, banded, notes, (33) 252; (34) 752.
 - cake, fertilizing value, (37) 426.
 - chlorosis—
 - notes, (26) 851; (28) 153; (34) 221, 749.
 - prevention, (26) 344.
 - relation to ferruginous soils, (26) 245.
 - relation to lime, (26) 344.
 - resistance to (39) 757.
 - studies, (26) 344; (33) 54.
 - treatment, (27) 651, 750, 850; (30) 542, 543; (34) 544; (35) 753, 754; (38) 51, 151.
 - colaspis in corn fields, (39) 58.
 - court noué—
 - as affected by grafting, (39) 757.
 - notes, (29) 551; (30) 150, 451, 452, 651; (31) 151; (38) 552.
 - studies, (28) 54, 550.
 - treatment, (27) 250; (28) 850; (30) 246; (31) 53; (32) 445; (37) 152; (38) 754.
 - crown gall, investigations, (28) 650.
 - culture, relation to meteorology, (34) 234.
 - curculio, notes, (26) 753; (28) 454; (37) 58.
 - curculio, studies, (40) 257.
 - cuttings and rooted vines, disinfection, (32) 235.
 - cuttings, callusing, (27) 145.
 - dead-arm disease, studies, (32) 52.
 - disease, nonparasitic, studies, (39) 552.
 - diseases and pests—
 - in Baden, (31) 539.
 - in Ontario, (35) 448.
 - treatment, (38) 843.
 - diseases—
 - description and control, (35) 351.
 - fungus, control, (40) 750, 845.
 - hot water treatment, (34) 50, 543.
 - in Barbados, (36) 541.
 - Brazil, (32) 238.
 - California, (37) 352.
 - France, (26) 244.
 - Greece, (36) 651.
 - Italy, (38) 351.
 - northern Italy, (37) 52.
 - São Paulo, (35) 550.
 - Turkestan, (36) 647.
 - Vardar, (36) 651.
 - western Australia, (33) 845.
 - notes, (26) 844; (27) 750, 848; (28) 748; (30) 147, 240, 353, 643, 849; (32) 344; (33) 444; (37) 550; (39) 849.
 - papers on, (35) 646.
 - relation to fog, (37) 152.
 - studies, (28) 550; (30) 148; (32) 751; (34) 445.

Grape—Continued.

diseases—continued.

- treatment, (27) 546; (28) 748; (31) 843; (34) 748
- downy mildew—
 - characteristic spots of, (31) 54.
 - conditions determining outbreak of, (33) 853.
 - development, (26) 550; (30) 247.
 - notes, (28) 349, 749; (29) 350; (30) 353; (32) 149, 446; (35) 50, 352, 550; (36) 347; (39) 56, 151, 356, 357, 457; (40) 53, 750, 845.
 - propagation by wind, (26) 344.
 - review of investigations, (29) 249.
 - studies, (26) 450, 851; (28) 51, 55, 244, 448; (27) 49, 449, 517; (28) 54, 55; (29) 155, 849, 850; (30) 452; (33) 248, 447, 549; (34) 352, 543, 544; (36) 515, 546, 650; (37) 151, 152, 251; (38) 51, 651, 754, 755; (40) 850.
 - treatment, (26) 550, 750; (27) 49, 652; (28) 152, 245, 850; (29) 50, 551; (30) 50, 150, 151; (31) 151, 152, 544; (32) 145, 149; (33) 448; (34) 544, 748, 847; (35) 249, 352, 753, 754; (36) 452, 751; (37) 152, 246; (38) 51, 552, 754, 755; (40) 252, 750.
- "Droah," notes, (28) 241.
- dry leaf disease, notes, (31) 844.
- flea beetle—
 - in France, (30) 458.
 - lesser, (40) 357.
 - notes, (29) 761; (35) 646.
- foliage as feeding stuff, (30) 371.
- foliage, effect on development of fruit, (29) 439.
- frizzle disease, notes, (28) 550, 650.
- gray rot—
 - fixation of nitrogen by, (26) 123; (27) 225.
 - formation of conidia on (30) 149.
 - notes, (27) 851; (29) 349; (31) 544, 749, 844; (33) 646; (34) 847; (35) 246.
 - on figs, (37) 457.
 - relation to apple rot, (33) 348.
 - studies, (26) 749; (27) 50; (28) 847; (37) 47, 350.
 - temperature relations, (36) 649.
 - treatment, (27) 850; (29) 349, 849; (30) 651.
- gummosis, notes, (28) 650.
- gunworm, notes, (30) 252.
- hybrids—
 - resistance to mildew and insects, (26) 138; (28) 840; (30) 741.
 - sexual elements of, (30) 43.
 - studies, (27) 540.
- industries, developing, (40) 839.
- industry in—
 - Algeria, (30) 741.
 - California, (35) 343; (38) 541.
 - South Australia, (29) 837.
- juice—
 - as nutritive remedial agent, (31) 358.
 - changes in, (34) 43.
 - clarification, (32) 208.
 - Concord, (39) 208.
 - examination, (26) 660.
 - manufacture, (30) 316.
 - pasteurization and biorization, (37) 805.
 - preservation, (38) 617.
 - preservation by pressure, (32) 416.
 - studies, (29) 711.
 - unfermented, examination, (33) 362.
 - unfermented, manufacture, (32) 208, 809.
 - use in grafting hickory and walnuts, (33) 643.
- leaf cast, treatment, (30) 50; (32) 345.
- leaf folder, studies, (36) 155.
- leaf mite, notes, (32) 651.
- leaf roll, treatment, (37) 246.
- leaf roller, school chart of, (31) 395.
- leaf scald, notes, (30) 448.
- leaf spot, treatment, (27) 250.
- leafhopper—
 - notes, (26) 452; (29) 158; (33) 356; (34) 158.
 - remedies, (27) 758; (33) 59.
 - studies, (27) 157; (28) 855; (30) 547; (33) 556.
- leaves—
 - detached, respiration in, (28) 528.
 - infection by *Plasmopara viticola*, (26) 550.
 - relation to grape clusters, (30) 132.
 - spray injury, (34) 353.
 - spraying underside of, (30) 651.
- little leaf, notes, (38) 754.

Grape—Continued.

- little leaf, studies, (36) 849.
- marc, analyses, (32) 166.
- marc, feeding value, (32) 567.
- mealybug—
 - notes, (35) 357.
 - remedies, (35) 54.
 - studies, (40) 650.
- mildew—
 - and leafhoppers, combined spray for, (33) 642.
 - development, (27) 851.
 - hybrids resistant to, (33) 854.
 - in southwest France, (27) 449.
 - notes, (31) 841; (34) 749; (36) 850; (38) 548; (40) 850.
 - relation to smoke, (28) 152.
 - resistant varieties, (39) 151.
 - studies, (33) 55.
 - treatment, (27) 153, 851; (34) 841, 842; (38) 47; (40) 843.
- mosaic disease, notes, (28) 650.
- must, fermentation under paraffin oil, (35) 617.
- must, proteolytic enzyme in, (27) 803.
- Oidium—
 - notes, (33) 549; (39) 356, 457; (40) 850.
 - or powdery mildew, notes, (34) 544.
 - relation to weather, (34) 543.
 - treatment, (28) 152; (38) 552, 651, 757; (40) 252, 750.
- Peronospora—
 - disease, studies, (31) 346.
 - relation to weather, (27) 547.
 - treatment, (29) 449; (30) 448.
- Pestalozzia rot, notes, (39) 52.
- phylloxera—*see also* Phylloxera.
 - control in Italy, (38) 58.
 - development, (35) 463; (36) 357.
 - emergence of first young, (33) 858.
 - in California, (35) 646.
 - notes, (27) 53; (29) 356; (30) 251, 358, 845; (40) 262.
 - production of inverted leaf galls by, (29) 854.
 - remedies, (34) 249; (35) 358, 658.
 - resistance, (30) 145.
 - resistance, breeding for, (40) 538.
 - resistance of different vines to, (31) 550.
 - review of investigations, (35) 658.
 - spontaneous distribution, (27) 454.
 - studies, (32) 847; (39) 657.
 - virginoparous forms, (33) 748.
- physiology, notes, (29) 439.
- plume moth, notes, (33) 58.
- pollen as affected by spraying mixtures, (29) 839.
- pourridié, notes, (26) 750.
- powdery mildew—
 - hibernation, (34) 847.
 - notes, (31) 746; (36) 347.
 - treatment, (28) 851; (29) 850; (36) 350, 546; (37) 152, 843; (38) 541.
- red scald, notes, (37) 555.
- red scald, studies, (28) 55; (30) 452.
- red spot, treatment, (26) 144.
- roncet—
 - notes, (28) 349, 650, 749; (32) 844.
 - studies, (26) 550, 851; (27) 449; (28) 245, 550, 851; (29) 349, 551; (30) 353; (31) 245, 645; (38) 151.
- root borer, notes, (37) 58.
- root borer, studies, (40) 257.
- root rot, studies, (32) 149.
- root weevil, studies, (39) 363.
- root worm—
 - new host plant of, (29) 657.
 - notes, (34) 65.
 - remedies, (26) 864.
- rot, studies, (29) 450.
- rust, notes, (38) 757.
- rusts in India, (27) 353.
- sap as affected by Bordeaux mixture, (30) 647.
- scale, studies, (27) 555.
- scions for American stocks, (27) 644.
- seed oil, analyses and use, (30) 617.
- seed, wild, oil of, (34) 501.
- seedlings, use as scions, (30) 144.
- seeds, removal from husks, (36) 801.
- sirup, investigations, (40) 414.
- skins, isolation of fat from, (29) 459.

Grape—Continued.

- stocks—
 adaptation to soils, (28) 742.
 American, use in northern France, (29) 340.
 behavior in heavy calcareous soils, (30) 237.
 diseases of, (31) 544.
 drought resistant, (36) 241.
 effect on quality and quantity of harvest,
 (30) 43; (31) 238, 534.
 for dry and limed soils, (27) 145, 441.
 modification through breeding, (32) 220.
 root systems of, (37) 43.
- sugar—
 effect on nitrification, (26) 721.
 rectal and intravenous utilization, (35) 368,
 369.
 toxicity toward dogs, (28) 462.
 tiger moth, notes, (32) 753.
 white rot, notes, (30) 247, 651.
 white rot, treatment, (30) 247, 543.
- Grapefruit—
 analyses, (29) 362; (39) 49, 202, 243.
 analyses and use, (30) 363.
 and oranges, hybrid between, (33) 441.
 bright v. russet fruit of, (34) 535.
 bud variation, (39) 845.
 changes in during ripening, (29) 641.
 chlorosis and yellowing, (39) 458.
 Cladosporium sp., affecting, (31) 645.
 composition and culture, (34) 835; (35) 745.
 decay in transit, (32) 745.
 diseases, notes, (39) 850.
 fertilizer experiments, (33) 48; (35) 839.
 food plant of purple scale, (26) 756.
 freeze injury, (39) 143.
 host plant of fruit fly, (26) 758.
 juice, preparation, (37) 313.
 maturity standards, (39) 545.
 Platynota rostrana affecting, (26) 150.
 production in California, (40) 342.
 scab, description and treatment, (31) 152.
 scab in Porto Rico, (38) 454.
 seedlings, fertilizer experiments, (31) 742.
 Siamese seedless, description, (31) 48, 837.
 skins, analyses, (38) 626.
 spotting, studies, (39) 458.
 storage experiments, (31) 338.
 studies, (39) 49, 202, 243, 545.
 sugar and acid contents, (29) 641.
 top-working, (38) 541.
 total solids and acidity of, (34) 661.
 variations in, (27) 441.
 varieties for Texas, (38) 40.
 yellowing caused by limestone, (39) 458.
- Grapes—see also Viticulture and Vineyards.
 absorption of foul gases by, (29) 49.
 acreage and values in California, (40) 538.
 adaptation and variety tests, (29) 41.
 American—
 culture in Messina, (28) 237.
 in Italian vineyards, (29) 238.
 root stocks for, (28) 640.
 sugar and acid content, (28) 840; (35) 647.
 analyses, (27) 10.
 aphids affecting, (37) 358.
 applying fertilizing solutions to aerial portions,
 (30) 129.
 arsenic content, (26) 841.
 as affected by—
 asphyxiating gas, (37) 153, 253.
 geotropic angle of roots, (26) 137.
 grafting, (28) 236, 437.
 spraying in flowering season, (31) 534.
 time of pruning, (31) 534.
 autolysis, (36) 802.
 autumn coloration of, (31) 34.
 bagging experiments, (35) 646.
 blooming period, (33) 639.
 Bordeaux injury to, (34) 748.
 breeding, (29) 641; (35) 646; (37) 449.
 breeding—
 and testing in Minnesota, (40) 148.
 experiments, (32) 338, 835; (33) 641; (35)
 239, 448; (36) 741; (39) 346.
 for phylloxera resistance, (40) 538.
 calcium carbide spraying, (40) 750.
 Californian, fermentation organisms, (40) 110.
 cambial activity, (37) 127.
 catalytic substances for, (33) 841.
 changes during ripening, (39) 141.

Grapes—Continued.

- Chasselas, stocks for, (31) 534.
 chemistry of, (26) 512.
 coccid enemies of, (36) 755.
 cold storage, (28) 437.
 coloring matter of, (34) 709.
 composite hybrid of, (28) 542.
 composition, (26) 441; (27) 10.
 conservation, (28) 437.
 conservation in gases, (33) 539.
 cooking qualities of different varieties, (32) 560.
 Corinth, girdling, (39) 242.
 cost of production, (29) 439.
 critical months, (39) 811.
 crossbreeding experiments, (36) 742.
 crown gall affecting, (28) 447.
 culture, (26) 741, 742; (27) 40; (33) 142; (35) 343;
 (40) 246.
 culture—
 and marketing, (39) 49.
 at Paarl viticultural station, (37) 144.
 experiments, (26) 137; (28) 142, 236, 436; (32)
 635; (34) 221; (35) 342, 538; (36) 139.
 in America, (28) 639.
 California, (35) 646.
 cordon, (40) 538.
 France, (34) 234.
 Italy, (34) 235.
 Japan, (33) 539.
 Mexico, (26) 46.
 Nasik District, India, (35) 343.
 New Mexico, (35) 646.
 New York, (35) 836.
 Ohio, (40) 640.
 Ontario, (35) 448.
 Oregon, (35) 646; (39) 241.
 Pennsylvania, (27) 145.
 sandy soils of Mexico, (30) 643.
 South Australia, (34) 341; (35) 835; (38)
 540; (40) 340.
 South Carolina, (34) 233.
 southern Texas, (32) 539.
 Spain, (33) 539.
 United States, (35) 744.
 Uruguay, (32) 744.
 Utah, (35) 646.
 preventable losses in, (33) 143.
 under glass, (30) 443.
- cureulionid enemies, (40) 170.
 defoliation, (26) 742.
 defoliation for control of pests, (38) 257.
 destruction by birds, (33) 152.
 determining affinity of stock and scion, (34) 42.
 development of sugar and acid in, (35) 108.
 direct bearing—
 hybrid, (31) 238, 637; (35) 41, 646, 838; (36)
 641; (38) 845; (39) 242, 447; (40) 538, 640, 838.
 hybrid in France, (34) 344.
 in France, (34) 234.
 in relation to disease, (37) 52.
 dust v. liquid spraying, (37) 832, 843.
 dusting, (38) 358.
 dusting experiments, (38) 546.
 European, culture—
 in eastern United States, (35) 239.
 under glass, (33) 237.
 exposed, dangers from, (30) 665.
 fertilizer experiments, (30) 822; (31) 339, 442,
 837; (35) 646; (40) 538.
 fertilizers in relation to mildew, (40) 850.
 filage of, (38) 754.
 forcing, (30) 238; (38) 443.
 French-American and American hybrids, (34)
 834.
 frost injuries, (29) 547.
 graft hybrids for Brittany, (39) 242.
 grafted—
 as affected by frost, (31) 47.
 durability, (26) 137.
 variation in, (28) 742; (29) 148.
 grafting, (27) 442; (30) 144.
 grafting experiments, (26) 137.
 grafting, new method, (40) 446.
 green, in ripe bunches, (34) 234.
 growth as affected by meteorology, (29) 510.
 heading-in, (27) 145.
 Hernito, (40) 342.
 history and culture, treatise, (33) 736.
 hybrid forms, (30) 144, 238.
 hybrid, stocks for, (39) 447.

Grapes—Continued.

- hydrofluoric acid injury, (37) 246.
- improvement in Minnesota, (34) 637.
- industry in California, (37) 144.
- inheritance in, (34) 234.
- inheritance of characters in, (33) 641.
- insect enemies, cultural control, (40) 259.
- insects affecting, (28) 352; (30) 240, 643; (31) 849; (32) 56; (33) 652, 746; (35) 448, 646; (38) 843.
- lightning injury, (40) 645.
- liming experiments, (34) 221.
- loading, (39) 748.
- localization of acids and sugars in, (36) 110.
- manufacture of vinegar from, (26) 809.
- manuring, treatise, (30) 443.
- mealy-bug problem, (39) 461.
- muscadine—
 - breeding, (37) 544.
 - culture, (40) 246.
 - home uses, (38) 114.
 - notes, (34) 834.
 - paste from, (40) 808.
 - self-fertile, (39) 541.
 - sirup from, (35) 807.
 - studies, (29) 238.
- new, description, (29) 838; (31) 337; (33) 238; (35) 37.
- of Central and Eastern States, composition, (36) 342.
- of Crimea, (27) 344.
- Ohanez, (39) 242.
- phylloxera-resistant—
 - inheritance in, (36) 537.
 - stock for, (33) 440.
- pollen germination in, (33) 539.
- potassium bitartrate crystals in, (30) 803.
- production in Spain, (27) 344; (29) 439; (31) 238; (35) 744; (36) 742; (39) 845.
- propagation, pruning, and training, (26) 336.
- pruning, (30) 344, 741; (32) 142, 234; (33) 339; (34) 234; (39) 544, 646.
- pruning—
 - and spacing, (30) 237.
 - and training, (26) 441; (33) 142; (35) 646.
 - experiments, (27) 540; (29) 238; (31) 534; (32) 234; (37) 40.
- raisin and currant, methods of drying, (27) 146.
- reducing and nonreducing sugars in, (29) 503.
- reproducing by cuttings, (36) 141.
- respiration in gases, (29) 135, 539.
- ripening studies, (34) 43; (35) 617; (39) 141.
- Rotundifolia—
 - breeding, (31) 636.
 - inheritance in, (33) 36.
 - inheritance of sex in, (37) 449.
 - propagation, (32) 539; (34) 635.
 - self-sterility in, (28) 639.
- scorching by sunlight, (29) 551.
- seedless, pruning, (38) 747.
- seedless raisin, (39) 845.
- self-fertilization in, (28) 48.
- sex inheritance, (39) 242.
- shipping, (39) 748.
- spray schedule, (39) 39; (40) 342.
- spraying, (33) 439; (38) 144; (39) 343, 345, 346, 356.
- spraying in relation to flowering, (33) 448.
- spraying with lead arsenate, (36) 537.
- sterility in, (31) 442; (32) 627.
- stocks for, (32) 337.
- storage, (30) 345; (40) 149.
- sulphate of manganese for, (29) 838.
- thrips affecting, (28) 354.
- thysanopteran pest, (39) 158.
- topping and pinching, (39) 350.
- transportation, (35) 647.
- treatise, (27) 539; (30) 43.
- utilization of solid residue, (29) 414.
- varieties, (28) 237, 533; (30) 41; (35) 448; (37) 832; (38) 41, 443, 842.
- varieties—
 - in Oklahoma, (27) 241.
 - in Portugal, (36) 537.
 - resistant to chlorosis, (27) 49.
 - resistant to mildew and frost, (27) 49.
 - resistant to Oidium tuckeri, (28) 245.
- variety tests, (32) 141; (40) 444.
- variety tests in Vinifera regions, (33) 538.
- venation angles and leaf dimensions in, (28) 541.

Grapes—Continued.

- Vinifera—
 - culture experiments, (37) 544.
 - grafting, (30) 841.
 - protection from frost, (32) 635.
 - winter treatment, (34) 737; (35) 41.
 - waste, vinegar from, (28) 395.
 - white, chromogenic substances of, (26) 407.
 - wine and by-products yielded by, (32) 208.
 - wine, grafting, (31) 47.
 - wine, improvement, (31) 47.
 - winter injury, (37) 655.
 - winter protection, (35) 239.
 - winterkilling, (39) 356.
 - xylophagous enemies of, (31) 849.
- Grapevine—
 - acariasis, notes, (26) 864.
 - aphis, alternate hosts, (39) 464.
 - aphis, life history, (38) 260.
 - apoplexy, notes, (30) 651.
 - cochylis—
 - control, (40) 456.
 - new parasite of, (27) 262.
 - remedies, (26) 60.
 - flea-beetle, steel-blue, notes, (35) 656.
 - gall mite, remedies, (26) 561.
 - leaf spots, notes, (36) 546.
 - mildew, studies, (30) 845.
 - moths—
 - biology and remedies, (34) 654.
 - control, (39) 764.
 - notes, (35) 54.
 - pyralid, bacterial disease of, (38) 654.
 - pyralid, notes, (27) 57.
 - pyralid, parasites of, (35) 659.
 - sap, composition, (34) 428.
 - sawfly, notes, (37) 255.
 - scawler or writer, notes, (27) 558.
 - sphinx moth, white-lined, (40) 648.
 - sphinx, notes, (26) 250.
 - tomato gall, notes, (37) 255.
 - trimmings, ground, analyses and feeding value, (26) 468.
- Grapevines—
 - alterations in wood following pruning, (28) 733.
 - analyses, (34) 767.
 - as affected by fungicides, (27) 850.
 - buried, changes in, (38) 822.
 - chlorosis resistance in, (27) 850.
 - coccid enemies of, (26) 655.
 - composition and digestibility, (31) 72.
 - deterioration in Sicily, (29) 349.
 - drought resistance in, (26) 239.
 - grafted, variations in, (36) 641.
 - node canker of, (32) 149.
 - rejuvenating, (26) 138.
 - renovation by layering, (31) 837.
 - resistance to hot water, (34) 843.
 - training, Oppenheim method, (27) 539.
 - treatment with hot water and sprays, (35) 352, 353.
 - wild, ash analyses, (27) 801.
- Graphiola—
 - coccolinia, notes, (36) 347.
 - phoenicis, notes, (29) 345; (36) 348, 511.
 - spp., notes, (39) 453.
- Graphiphora alia, notes, (36) 549.
- Graphite—
 - effect on linseed oil, (28) 714.
 - in soil, effect on plants, (29) 19.
- Graphium spp., studies, (27) 354.
- Grapholitha—see also Laspeyresia.
 - funebrana, bionomics and remedies, (33) 155.
 - leplastriana, notes, (31) 850.
 - schistaceana, notes, (34) 656, 758; (38) 465.
 - spp., injurious to fir and spruce, (34) 855.
- Graphomyia maculata, studies, (37) 704.
- Grass—
 - anthracnose, identity, (31) 746.
 - artificial curing, (36) 439.
 - as sole ration for cows, (33) 174.
 - bacillus, metabolism, (33) 771.
 - billbug, little, biology, (29) 56.
 - billbug, notes, (29) 52.
 - blossoming conditions, (36) 332.
 - culms, development, (32) 432.
 - demonstrations in the South, (28) 829.
 - diseases in Württemberg, (29) 845.
 - diseases, treatment, (34) 541.

Grass—Continued.

- east-coast, analyses, (26) 768, 873.
 - effect on—
 - fruit trees, (26) 639; (33) 339.
 - milk and butter, (34) 570.
 - nitrate content of soils, (29) 819.
 - roots of young forest trees, (33) 645.
 - embryo, morphology, (37) 127.
 - eradication, (37) 532.
 - for irrigated pastures, (38) 130, 337.
 - for pasture and hay in Texas, (37) 827.
 - for shifting sands, (37) 333.
 - fresh—
 - and hay, comparative feeding value, (35) 372.
 - composition and digestibility, (34) 371.
 - feeding value, (26) 574.
 - grubs, notes, (30) 554.
 - hybridization experiments, (34) 228.
 - identification, (36) 333, 527, 541.
 - improvement, (34) 34; (36) 297.
 - meadow, composition and digestibility, (36) 469.
 - mixtures—
 - for canal banks, (28) 829.
 - meadows, (29) 736.
 - pastures, (31) 37.
 - prairie pastures, (36) 437.
 - liming experiments, (40) 322.
 - notes, (30) 829; (31) 830.
 - tests, (26) 231, 630, 830; (28) 532; (29) 32; (30) 229; (31) 430; (32) 506; (33) 430; (35) 31; (36) 132, 333; (37) 230, 735; (38) 133, 666; (39) 135, 333, 336; (40) 72, 732, 733.
 - moth, studies, (33) 560.
 - moth, yellow-barred, notes, (39) 557.
 - moths in Quebec, (38) 459.
 - mulch for orchards, (37) 833.
 - native pasture, of United States, (33) 227.
 - planting in small parks, (33) 442.
 - plots, harvesting, (36) 197.
 - plots, harvesting device for, (38) 228.
 - root aphids, notes, (40) 649.
 - rotation experiments, (36) 528.
 - rust, notes, (26) 143.
 - rusts—
 - relation to cereal rusts, (33) 345.
 - relation to timothy rusts, (31) 344.
 - studies, (34) 744.
 - taxonomy, (33) 130.
 - scale, western cottony, notes, (29) 252.
 - seed—
 - cleaning, (40) 40.
 - depth of planting, (31) 830.
 - germination tests, (36) 338, 437, 638.
 - imported, germination tests, (35) 140.
 - in Maryland markets, (32) 740.
 - inspection in Maryland, (36) 442.
 - production in Europe, (26) 436.
 - purity tests, (36) 638.
 - valuation, (36) 638.
 - vitality, (27) 740.
 - seeding on cut-over land, (37) 228.
 - seeding on ranges, (35) 439.
 - seedlings, comparative anatomy, (34) 134.
 - seeds—
 - awned, abnormal germination, (30) 633.
 - germination and purity tests, (30) 40.
 - germination tests, (29) 740; (31) 227; (32) 331.
 - production, (31) 524.
 - ruse spores in, (30) 241.
 - testing, (31) 43.
 - valuation, (30) 40.
 - sickness in lambs, (34) 383.
 - smut, new, description, (26) 846.
 - smut, treatment, (35) 149.
 - tree as feeding stuff, (33) 72.
 - trees, of South Australia, (37) 548.
 - webworm, *see* *Crambus luteolellus*.
 - with creeping roots, (36) 438.
 - young, feeding value, (36) 439.
- Grasserie, destruction, (27) 559.
- Grasses—*see also* Meadows, Pastures, and specific kinds.
- Alaskan, for silage and hay, (39) 125.
 - Alpine pasture, breeding experiments, (30) 633.
 - analyses, (30) 565, 868.
 - as affected by—
 - associated legumes, (37) 438.
 - frequent clipping, (33) 430.
 - soil acidity, (37) 446.

Grasses—Continued.

- breeding, (30) 525; (31) 131, 227.
- breeding experiments, (26) 830; (29) 138, 139; (36) 332; (40) 735.
- breeding technique and methods, (35) 232.
- British, treatise, (40) 525.
- changes in during curing, (32) 110.
- classification of varieties, (27) 31.
- composition—
 - and digestibility, (27) 669; (31) 863.
 - as affected by drought, (28) 533.
 - as affected by fertilizers, (32) 665.
 - at different stages, (32) 331.
- crushing and drying, (27) 277.
- culture, (32) 132, 430; (33) 526, 527; (39) 834.
- culture—
 - experiments, (26) 237, 830; (28) 532; (29) 224, 631; (30) 133, 632, 828; (32) 132; (33) 33; (34) 34, 228, 630, 736; (35) 829; (36) 32; (38) 132, 634; (39) 124; (40) 735.
 - for winter forage, (38) 735.
 - in Brazil, (29) 428.
 - Dutch East Indies, (30) 697.
 - Hawaii, (32) 729.
 - Montana, (33) 526.
 - Nebraska, (40) 521.
 - New York, (39) 532.
 - North Wales, (34) 323.
 - Philippines, (26) 361; (30) 230.
 - sand hills of Nebraska, (35) 827.
 - Siegerland, (29) 589.
 - the Ozarks, (29) 427.
 - on moor soils, (38) 132; (39) 438.
 - under dry farming, (36) 528.
- cyanogen in, (33) 665.
- development as affected by water, (31) 524.
- "digested," digestibility, (31) 667.
- dissemination of fungi by, (28) 442.
- drying, (27) 669.
- effect on fruit trees, (29) 339.
- embryology, (30) 633.
- exhibits, (29) 93; (31) 495.
- fertilizer experiments, (26) 232, 631, 734, 817; (27) 530, 724, 833; (28) 520; (29) 735; (30) 133, 134, 721, 820; (31) 31, 133, 173, 821; (33) 227, 228, 326, 526; (34) 25, 128, 423; (35) 517; (36) 121, 438; (38) 218, 829; (39) 22; (40) 134, 735.
- fodder—
 - of German East Africa, (38) 66.
 - India, (39) 231, 234.
 - Indian forests, (29) 170.
 - Java, (35) 440; (38) 528.
- for hay, tests, (39) 333.
- irrigated pastures, (40) 374.
- lawns, (29) 148.
- reclaimed swamp lands, (40) 231.
- germination, (40) 222.
- growth—
 - as affected by carbon dioxide, (28) 728.
 - on volcanic ash, (29) 726; (32) 36; (39) 124.
 - under drought conditions, (37) 437.
 - with legumes, (33) 527.
- indigenous to Australia, (26) 830.
- insects affecting, (27) 552; (34) 651; (38) 557; (39) 556; (40) 163.
- irrigation experiments, (29) 426; (31) 732; (32) 224.
- lawn, as affected by soil acidity, (40) 125.
- lawn, new Sclerotium disease, (39) 753.
- liming experiments, (34) 132.
- meadow, first year development, (32) 330.
- metaphanic variation, (39) 551.
- native, for forage, (31) 829.
- new, for the South, (29) 428.
- new or noteworthy, in U. S. National Herbarium, (34) 226.
- North African desert, roots of, (26) 535.
- nutritive value, (29) 170.
- of Ahmadabad and Surat, (32) 37.
- Australia, (40) 524.
- German East Africa, composition, (36) 334.
- German Southwest Africa, (27) 871; (32) 167.
- Guam, (31) 467.
- Hawaii, (32) 731; (39) 632.
- Illinois, (39) 231.
- India, analyses, (28) 768.
- Java, (31) 431.
- Nebraska, (33) 131.
- New Mexico, (27) 431.

Grasses—Continued.

- of New South Wales, (33) 527.
 - New South Wales, hydrocyanic acid in, (31) 520.
 - Ohio, (38) 528.
 - Philippines, (33) 433.
 - Queensland, analyses, (28) 463.
 - Russia, notes, (28) 364.
 - Victoria, (40) 32.
 - West Indies, (39) 440; (40) 32.
 - on bog and moss soils, (40) 212.
 - palatability, (33) 674; (34) 865.
 - pasture—
 - analyses, (33) 227.
 - breeding and selection, (33) 430.
 - culture experiments, (34) 228.
 - for irrigated lands, (32) 628.
 - notes, (30) 829.
 - of Uruguay, (30) 868.
 - trials, (39) 130.
 - pollination experiments, (37) 734.
 - red spider attacking, (39) 65.
 - relation to climate, (28) 27.
 - relation to climatic and edaphic factors, (39) 734.
 - relation to dry farming, (37) 437.
 - root parasites of, (31) 842.
 - Sclerotium disease affecting, (27) 150.
 - seeding experiments, (31) 524.
 - sewage for, (26) 716.
 - Spanish, of northern Africa, (33) 131.
 - tests, (35) 528.
 - textbook, (32) 133.
 - transpiration, (39) 517.
 - treatise, (29) 139.
 - tropical, for paper making, (40) 823.
 - varieties, (27) 32, 334; (28) 431; (29) 138, 222, 428, 530, 631; (30) 229, 828; (31) 133, 828; (32) 431; (34) 736; (35) 134; (37) 132, 227; (38) 131, 335, 433, 634, 828; (39) 336; (40) 735.
 - water requirements, determination, (33) 228.
 - wild, breeding experiments, (32) 532.
 - wild fodder, of Poona District, India, (37) 136.
 - yield as affected by ground water level, (29) 531.
 - yield as affected by wind-breaks, (28) 40.
- Grasshoppers—*see also* Locusts.
- affecting Sudan grass, (33) 747.
 - and their control, (34) 158.
 - breeding experiments, (40) 367.
 - clear-winged, *see* *Camnula pellucida*.
 - control, (33) 59; (39) 59, 359, 558, 656, 763.
 - control in Imperial Valley, (34) 450.
 - control in New York, (34) 61.
 - destruction, (34) 653.
 - differential studies, (39) 359.
 - immunity principle in, (39) 358.
 - in Colorado, (34) 651.
 - Mermis epidemic among, (39) 359.
 - notes, (33) 746; (34) 752; (40) 452, 453, 853, 856.
 - outbreak in New Mexico, (34) 159.
 - pink, notes, (33) 58.
 - poison baits, (39) 359.
- Grassland—*see also* Grasses, Meadows, and Pastures.
- as affected by burning, (31) 721.
 - basic slag for, (34) 298.
 - botanical characteristics, (30) 828.
 - care, (30) 829.
 - composition of herbage, (28) 123; (37) 230.
 - culture, Elliot system, (33) 431.
 - culture in Netherlands, (31) 596.
 - dry, of high mountain parks, (36) 434.
 - English, breaking up, (39) 631, 616, 724.
 - fertilizer experiments, (26) 32; (28) 533; (29) 530, 728, 736; (32) 331, 630; (40) 626.
 - harvesting for hay and grazing, (40) 824.
 - improvement, (38) 635.
 - liming, (37) 230.
 - liming experiments, (39) 530; (40) 824.
 - manuring, (27) 431.
 - of west of England, (39) 439.
 - phosphates for, (35) 630; (39) 520.
 - potash fertilizers for, (26) 526; (32) 126.
 - precipitation-evaporation factor in, (37) 525.
 - relation to food production in Great Britain, (38) 635.
 - seeding and management, (36) 97.
 - top-dressing, (27) 337; (31) 132; (38) 218.

- Grasslands, Rocky Mountain, and prairie, comparison, (38) 824.
- Gravel—*see also* Road materials.
 - abrasion test for, (31) 687.
 - for concrete, screening, (39) 87.
 - for roads, (37) 288, 695; (38) 692.
 - grading for road construction, (37) 788.
 - grouting tests in river beds, (29) 337.
 - of New Hampshire and Vermont, (34) 787.
 - production in 1912, (30) 87.
 - wearing tests, (33) 781.
- Gravitation—
 - and related phenomena, theory, (34) 494.
 - as affected by temperature, (36) 419.
- Gravity acceleration, determination, (36) 419.
- Gray scale, remedies, (36) 357.
- Grayfish, description and food value, (37) 63.
- Grazing—*see also* Range.
 - effect on soil moisture, (28) 321.
 - effect on western yellow pine reproduction, (38) 447.
 - in dry weather, (33) 98.
 - in forests, (40) 343, 448.
 - in Wenaha National Forest, (33) 466.
 - industry in blue grass region, (35) 867.
 - lands, depleted, reseeded, (30) 35.
 - lands of Scotland, (34) 299.
 - lands, stock watering places on, (31) 366.
 - lands, western, erosion control, (39) 439.
 - on public lands, (34) 305.
 - relation to timber reproduction, (29) 543.
 - studies, (29) 531.
 - system, deferred reproduction and rotation, for Kansas pastures, (39) 439.
- Grease, recovery from sewage, (27) 319; (28) 619; (31) 417.
- Greases, hard, methods of analysis, (35) 316.
- Greasy surface caterpillar, biology, (40) 167.
- Great Lakes, meteorological influences, (38) 317.
- Grebe, horned, notes, (27) 355.
- Greedy scale—
 - notes, (28) 854.
 - on olive, (38) 157.
- Green—
 - bug, *see* Grain aphid, spring, and Toxoptera graminum.
 - flash at sunset, (33) 717.
 - fly, destruction on rose bushes, (27) 621.
 - foods, vitamins in, (40) 564.
 - fruit worm, notes, (28) 156, 157; (34) 752; (36) 549.
 - fruit worm, oviposition of, (31) 352.
- Green manure—
 - and manuring in the Tropics, treatise, (37) 28.
 - action of, (29) 820.
 - ammonification and nitrification of, (33) 514.
 - applying barnyard manure with, (33) 721.
 - as nutrient for soil bacteria, (34) 327.
 - as source of energy in nitrogen fixation, (32) 515.
 - bacteriological effects, (32) 721.
 - crops, insects affecting, (38) 357.
 - crops of Java, (34) 344.
 - crops, plowing under v. feeding, (38) 622.
- decomposition—
 - as affected by cow manure, (32) 514.
 - as affected by manure, (34) 129; (36) 817; (39) 725.
 - in soil, (38) 623.
- effect on—
 - germination of seed, (28) 816; (33) 331; (35) 529.
 - grapes, (31) 339.
 - soil acidity, (37) 718; (38) 20.
 - soil bacteria, (37) 121.
 - soil nitrates, (33) 720.
 - soil nitrogen, (35) 218.
 - solubility of inorganic soil constituents, (37) 422.
- farming, (26) 817.
- farming, treatise, (26) 425.
- fermentation in soils, (30) 626.
- fertilizing value, (26) 522; (31) 124, 732; (35) 125; (36) 818; (37) 425.
- for acid soils, (34) 621.
- for Oregon, (32) 333.
- sandy and white moss soils, (35) 628.
- sandy soils, (32) 124.
- semiarid soils, (37) 319.
- swamp rice soils, (37) 425.
- humification (31) 120; (39) 423.
- insect pests, (40) 259.

- Green manure—Continued.
 nitrification, (28) 124.
 relation to failure of seedlings, (35) 24.
 relation to nitrogen fixation, (38) 27.
 tests, (29) 830.
 time and depth of plowing under, (35) 425.
 use, (33) 516.
 use in Germany, (33) 624.
 use of carbon dioxide with, (32) 322.
 varieties, (30) 525.
- Green manuring—
 as affecting availability of floats, (39) 25.
 effect on soil nitrogen and humus, (28) 624.
 effect on sugar beets, (26) 438.
 experiments, (26) 233; (27) 638; (28) 339, 721;
 (29) 540; (30) 325, 731, 741; (31) 635, 722; (32)
 132, 216, 722; (36) 324, 518; (37) 320; (39) 30, 326,
 622, 725, 816; (40) 24, 126, 229, 321.
 for swedes, (26) 536.
 for tea, (30) 444.
 illustrated lecture, (39) 898.
 in Central Provinces, India, (35) 123.
 East Indies, (39) 423.
 India, (31) 215; (36) 623; (37) 334; (39) 229.
 Japan, (29) 729.
 Java, (36) 324.
 Mysore, (27) 21; (38) 220.
 loss of organic matter in, (39) 816.
 notes, (26) 723; (30) 125, 625; (31) 122; (32) 332,
 423; (33) 217; (34) 138.
 relation to soil acidity, (39) 216, 424.
- Green—
 oil, insecticidal value, (34) 359.
 plant bug, southern, (39) 558.
 scale fungus, new, (36) 253.
 scale, notes, (38) 364.
 shield scale, notes, (35) 852.
 soldier bug, see *Nezara viridula*.
 vegetables, bacterial count, (40) 658.
- Greenbottle fly—
 heredity of bristles in, (31) 551.
 studies, (33) 157.
- Greenbrier fruit, analyses, (36) 502.
- Greenheart—
 durability tests, (34) 56.
 notes, (28) 544.
 tree, notes, (36) 745.
- Greenhouse—
 crop diseases, notes, (27) 644.
- crops—
 and soil, injury by gas, (37) 727.
 carbon dioxide for, (39) 38.
 culture on muck or humus soils, (34) 139.
 fertilizer experiments, (39) 843; (40) 739, 741.
 insects affecting, (27) 644; (32) 448; (38) 459,
 556.
 malnutrition or overfertilization, (30) 141.
 fumigation experiments, (37) 660.
 insecticides, tests, (30) 355.
- insects—
 apparatus for removing, (39) 463.
 in New Jersey, (36) 550.
 new, (40) 753.
 notes, (40) 163.
 investigations, variable factors in, (32) 535.
 leaf tyer, see *Phlyctaenia ferrugalis*.
 plants, effect of low temperatures on, (40) 147.
 plants, insects affecting, (28) 853.
 soils, partial sterilization, (26) 815; (27) 621; (31)
 336.
 soils, "sickness" in, (28) 119.
 soils, sterilization, (32) 620; (38) 556.
 thrips, notes, (27) 555; (30) 753; (31) 751; (35)
 658.
 thrips, studies, (26) 247.
- Greenhouses—
 Coccidae of, (39) 762.
 cockroach pest, (39) 761.
 construction, (32) 386; (40) 247.
 construction and equipment, (38) 39.
Cronartium ribicola in, (39) 248.
 determination of humidity in, (33) 638.
 electricity in, (30) 488.
 factors affecting light in, (29) 741.
 fumigation, (29) 41, 641; (32) 536; (36) 842; (38)
 155, 158, 258, 330; (39) 256.
 heating, (31) 533; (35) 742.
 hot water heating for, (27) 893; (34) 88.
- Greenhouses—Continued.
 insect pests of, (29) 252; (33) 746; (34) 59.
 red spider in, (39) 65.
 small, construction and management, (28) 838;
 (35) 445.
 summer utilization, (33) 42.
 Greens, preservation, (38) 266.
- Greensand—
 as source of potash, (39) 218, 219; (40) 299, 423.
 deposits in eastern United States, (38) 122.
- Gregarina n.spp., descriptions, (37) 558.
- Gregarine—
 parasites, new, description, (34) 364.
 sp., notes, (30) 362.
- Gregarines—
 chromosome cycle, (34) 458.
 studies, (27) 551; (37) 53.
- Grevillea robusta—
 arbutin in leaves of, (27) 527.
 crown gall affecting, (28) 447.
- Grewia spp., analyses and digestibility, (27) 871;
 (32) 167.
- Grignon, France, college and experiment station,
 history, (32) 290.
- Grindelia oregana wilkesiana n.sp., description,
 (34) 336.
- Gristmill industry in United States, (31) 65.
- Grit, value in poultry feeding, (34) 377.
- Grits, composition, (33) 259.
- Grits, inspection in South Carolina, (28) 265.
- Groceries, cooperative buying, (31) 262.
- Grocer's encyclopedia, (31) 68.
- Grocery stores—
 inspection, (29) 661; (30) 665; (31) 359, 667; (32)
 162; (33) 67; (36) 663.
 inspection in Indiana, (34) 861.
 inspection in Virginia, (29) 766.
- Grosbeak, black-headed, destructive to codling
 moth, (27) 559.
- Grotiusomyia n.g. and n.spp., descriptions, (39) 869
- Ground—
 bone—
 analyses, (28) 726; (39) 329.
 fertilizing value, (27) 736.
 for carnations, (27) 844.
 glass ingestion, effect, (40) 385.
 hogs, revision, (33) 57.
 levels in democracy, treatise, (34) 796.
 squirrels, see *Squirrels*.
- Groundnuts, see *Peanuts*.
- Groundsel, heredity of characters in, (29) 216.
- Grouse—
 Canada, growing in captivity, (27) 675.
 coccidiosis in, (26) 187.
 disease, paper on, (38) 256.
 heather and moor burning for, (40) 667.
 ruffed, notes, (27) 355.
 treatise, (26) 146.
- Growing season in United States, (40) 209.
- Growth—
 acceleration after retardation, (34) 862.
 accessories in corn, (36) 158.
 amino acids in, (31) 558; (32) 460, 662.
 anaerobic plating for observation, (36) 379.
 and form, treatise, (40) 566.
 and nutrition, standards for, (40) 865.
 as affected by—
 diet, (29) 164; (32) 256.
 fasting, (29) 869.
 inorganic elements in diet, (40) 70.
 isolated ovaries, (40) 662.
 milk fat, (30) 560.
 mineral content of rations, (33) 666.
 natural fats, (33) 262.
 pituitary and thymus substances, (35) 171.
 pituitary feeding, (34) 765; (36) 468.
 protein intake, (30) 366; (32) 262, 465.
 restricted rations, (33) 69, 367.
 vegetable fats, (33) 465.
 biochemistry of, (30) 201, 477.
 chemistry and physiology of, (36) 363.
 chemistry of, (32) 360, 697.
 choice of diet for, by rats, (39) 770.
 dietary factors in, (34) 368; (38) 367.
 digest of data, (31) 463; (33) 462.
 energy expenditure required for, (29) 65.
 in animal organisms, (32) 165.
 in fowls as affected by calcium salts, (39) 177.
 lectures and seminars on, (35) 403.
 nutrition factors affecting, (31) 69.

Growth—Continued.

- of human body, (40) 872.
- of infants as affected by maternal ingestion of placenta, (40) 566.
- of steers on limited rations, (40) 567.
- of young animals as affected by Roentgen rays, (31) 664.
- of young animals following parturition, (40) 877.
- on autoclaved casein, (39) 369.
- organic, electrolytic concept, (38) 524.
- pathology of, (31) 280.
- postnatal, of undersized rats, (40) 469.
- producing substance in typhoid bacillus cultures, (39) 82.
- relation to—
 - chemical constituent of diet, (30) 64.
 - diet and body composition, (36) 663.
 - mineral content of rations, (29) 64.
- resumption after stunting, (34) 562.
- stimulation, (32) 697.
- studies, (34) 561; (35) 472, 864; (36) 160, 263, 366, 524; (38) 729.
- theory of, (29) 64.
- Grubbing machines, motor driven, notes, (27) 588.
- Grubs—
 - grass, notes, (30) 554.
 - in West Indian soils, (28) 858; (29) 858; (30) 554.
 - lamellicorn, of West Indies, (35) 661.
 - white, *see* White grubs.
- Grugru nuts and kernels, oil content, (31) 234.
- Gryllidae of Formosa and Japan, (30) 250.
- Gryllotalpa—
 - gryllotalpa, *see* Mole cricket, European.
 - vulgaris, *see* Mole cricket.
- Gryllotalpoidea of South America, (37) 157.
- Gryllus domesticus, *see* Cricket.
- Gusiacol—
 - antiseptic value, (39) 885.
 - in oil, germicidal power, (40) 882.
- Guam grass—
 - chloroform extract of, (31) 71.
 - composition, (27) 668.
 - digestibility, (27) 669; (37) 168.
- Guam Station—
 - report, (28) 194; (30) 94; (31) 495; (32) 796; (35) 898; (37) 796; (40) 396.
 - work of, (38) 607.
- Guama—
 - ant, remedies, (31) 637.
 - as a honey plant, (27) 856.
- Guanoac, value as domestic animals, (27) 470.
- Guanidin—
 - assimilation by mold fungi, (29) 29.
 - effect on plants, (27) 27; (28) 426.
 - fertilizing value, (30) 323.
 - hydrochlorid, assimilation by plants, (26) 32.
 - in germinating corn, (35) 202.
 - in rice polishings, (33) 167.
 - nitrate, fertilizing value, (31) 518, 822; (34) 25; (36) 134.
 - nitrification in soils, (38) 119.
- Guanidoglycylglycylglycin, synthesis, (36) 202.
- Guanin—
 - assimilation by mold fungi, (29) 29.
 - effect on plant growth, (28) 324.
 - in cows' milk, (37) 308; (38) 506.
 - in rice polishings, (33) 167.
 - isolation from soils, (28) 218, 417.
 - pentosid and vernin, identity, (27) 407.
- Guano—
 - analyses, (26) 715; (33) 424, 821.
 - Argentina, composition, (27) 327.
 - bat, *see* Bat guano.
 - bird, fertilizing value, (29) 129.
 - cave, analyses, (40) 621.
 - Chincha and Lobos, fertilizing value, (33) 722.
 - deposits—
 - of Ballestas Islands, exploitation, (33) 424.
 - of South Africa, (29) 516.
 - on Naura Island, (31) 321.
 - exports from India, (33) 327.
 - fertilizing value, (29) 829; (39) 625.
 - fish, *see* Fish guano.
 - industry in—
 - Chile, (30) 720.
 - Peru, (31) 30, 517.
 - South African islands, (31) 122.
 - islands in Pacific Ocean, (31) 726.
 - notes, (28) 817.

Guano—Continued.

- Peruvian—
 - analyses, (28) 523.
 - composition, (29) 318.
 - fertilizing value, (26) 829; (29) 31.
 - production and use in 1911, (29) 213.
 - residual effects, (31) 319.
- Philippine, analyses and notes, (28) 521.
- relation to tobacco gummosis, (28) 243.
- supply of French Somaliland, (27) 521.
- use as a fertilizer, (36) 425.
- Guanosin, metabolism of, (32) 256.
- Guar—
 - culture, (32) 226.
 - culture experiments, (27) 136; (28) 735; (31) 829.
 - culture in New South Wales, (26) 835.
 - meal, analyses, (38) 572.
 - notes, (26) 362.
- Guava—
 - analyses, (40) 763.
 - diseases, notes, (29) 243.
 - pink disease, notes, (27) 445.
- Guavas—
 - analyses, (32) 761.
 - analyses and use, (30) 363.
 - budding, (32) 143.
 - culture in Gujarat, (36) 642.
 - host plant of fruit fly, (26) 758.
 - insects affecting, (26) 553.
 - of Hawaii, (37) 835.
 - recipes, (28) 660.
 - strawberry, cold storage of, (32) 439.
- Guayule—
 - culture experiments, (29) 443.
 - rubber and resin content as affected by rainfall, (30) 744.
- Guignardia—
 - aesculi—
 - n.comb., description, (35) 851.
 - studies, (35) 154.
 - treatment, (39) 548.
 - baccarum, notes, (39) 457.
 - bambusae n.sp., studies, (27) 154.
 - bidwellii, chlamydospores of, (28) 152.
 - bidwellii, studies, (40) 851.
 - vaccinii, treatment, (39) 749.
- Guinea-chicken hybrid serum, refractive index, (35) 279.
- Guinea corn—
 - culture experiments, (29) 830; (32) 227; (35) 135.
 - culture in Jamaica, (32) 229.
 - diseases in West Indies, (37) 452.
 - fertilizer experiments, (30) 525.
 - hydrocyanic acid in, (33) 506.
 - varieties, (30) 525; (32) 435.
- Guinea fowl-peacock hybrids, notes, (33) 575.
- Guinea fowls—
 - breeding, feeding, and marketing, (38) 174.
 - care and management, (39) 176.
 - horny tissue on head of, (28) 668.
 - interstitial cells, (39) 177.
 - management, (40) 177.
 - serum proteins of, (32) 861.
- Guinea grass—
 - analyses, (38) 368.
 - composition and culture, (31) 832.
 - culture experiments, (28) 136, 633, 735; (30) 434, 632; (31) 524; (37) 730.
 - culture in Guam, (32) 731.
 - culture in Philippines, (26) 361; (40) 231.
 - effect on fat content of milk, (30) 678.
 - fertilizer experiments, (27) 336.
 - notes, (26) 362.
 - yields, (29) 224.
- Guinea pig serum, anaphylatoxin produced in, (37) 579.
- Guinea pigs—
 - as affected by oat diet, (36) 364.
 - as affected by tuberculin, (29) 480.
 - bleeding, (40) 479.
 - breeding, (30) 874.
 - breeding experiments, (27) 370.
 - care and management, (28) 173; (37) 775.
 - castration, (29) 168.
 - color, sex, and fertility in, (30) 472.
 - composition in milk, (40) 775.
 - epilepsy in, (35) 564.
 - genetic studies, (34) 464.
 - growth in embryo and after birth, (35) 564.
 - growth of, (30) 467.

- Guinea pigs—Continued.
 healthy and tuberculous, temperature, (28) 781.
 hybridization experiments, (28) 667; (39) 877.
 identification, (35) 880.
 immunization against—
 anthrax, (28) 376; (29) 378.
 glanders, (27) 782; (30) 578.
 tuberculosis, (26) 85; (29) 480; (32) 275; (34) 82.
 immunization experiments, (35) 485.
 infectious disease, (39) 686.
 inheritance of—
 acquired characters in, (28) 877.
 color in, (26) 878; (27) 573; (38) 776.
 tricolor in, (30) 265, 266; (35) 770.
 tuberculo-protein hypersensitiveness in, (26) 182.
 intra-uterine growth cycles of, (29) 168.
 morphology of blood, (28) 777.
 nontubercular mortality in, (26) 182.
 normal and tubercular, chemical composition, (35) 883.
 normal metabolism, (38) 572.
 oestrous cycle, (40) 467.
 of Laysan Island, (27) 549.
 physiology of reproduction in, (33) 369.
 pigmentation, (40) 177.
 pneumonia in, (30) 579.
 raising, (29) 472.
 resistance to tubercle bacilli, (30) 783.
 rotation of blood plasma and serum in, (29) 881.
 sex determination and control in, (33) 168.
 structure simulating Negri bodies in brain of, (28) 584.
 susceptibility to pneumonic plague, (28) 180.
 transplanting of ovaries in, (28) 173; (30) 472.
 treatise, (30) 874.
 tuberculous, cell content of blood, (28) 283.
 tuberculous, intra-vitam staining, (30) 81.
- Guizotia—
 abyssinica, culture for seed, (37) 230.
 cake, analyses and feeding value, (29) 467.
 oleifera cake, feeding value, (26) 267.
- Gulaman dagat, use as food, (40) 557.
- Gull, Franklin's notes, (27) 355.
- Gullet worm of sheep and cattle, life history, (34) 783.
- Gulls, reclamation, (33) 392.
- Gulls, North American, distribution and migration, (34) 158.
- Gulonic lactone, preparation, (40) 110.
- Gum—
 adhesive, preparation from corncocks, (40) 17.
 arabic, determination, (35) 417.
 arabic, use in food products, (34) 167.
 asafetida, lead number of, (32) 300.
 collecting and distilling, (33) 543.
 desert, culture experiments, (34) 232.
 destructive distillation, (27) 745.
 determination in—
 gum sirups, (36) 507.
 linseed cake, (26) 714.
 sirups, (28) 205, 206.
 sugar residues, (36) 415.
 humification, (38) 26.
 moth in Australia, (40) 857.
 red, distillation value, (32) 48.
 resin, extraction from *Boswellia serrata*, (29) 43.
 resins, methods of analysis, (27) 205.
 resins of *Araucaria araucana*, (40) 615.
 tragacanth—
 as binder for ice cream, (36) 78.
 bassorin, conversion into bassoric acid, (40) 202.
 detection, (27) 14.
 use in food products, (34) 167.
 weed, water requirement, (32) 127.
- Gumhár, notes, (29) 443.
- Gummosis—
 notes, (27) 249.
 soil reaction studies, (39) 56.
 studies, (30) 747, 749; (35) 331.
- Gum-oleo-resin from *Boswellia serrata*, (40) 248.
- Gums—
 chemistry of, (31) 409.
 of Chile, (38) 336.
 treatise, (30) 310.
 vegetable, detection in food products, (40) 410.
- Gumwoods, North American, characteristics, (26) 339.
- Gunfire, effect on rainfall, (38) 115, 511.
- Gunpowder, fertilizing value, (29) 625.
- Gur manufacture in United Provinces, (40) 208.
- Gutta-percha—
 composition and quality, (26) 745.
 industry in Kaiser Wilhelm Land, (26) 745.
- Guvacin, chemical formula for, (31) 309.
- Gyaloccephalus—
 capitatus, notes, (39) 686, 892.
 equi n.sp., description, (39) 892.
- Gymnasts, gaseous metabolism of, (34) 261.
- Gymnocasus spp., notes, (28) 562.
- Gymnocladus canadensis, warty roots of, (31) 546.
- Gymnococnia—
 interstitialis, notes, (29) 50; (37) 457; (38) 454.
 peckiana, notes, (40) 53.
 peckiana, selected cycles, (39) 528.
- Gymnogaster buphthalmia, notes, (29) 858.
- Gymnonychus californicus, studies, (36) 260.
- Gymnoparea (*Actia*) pilipennis, notes, (35) 659.
- Gymnosperms, serodiagnostic classification, (38) 731.
- Gymnosporangia on *Myrica* and *Comptonia*, (37) 551.
- Gymnosporangium—
 biology and taxonomy, (27) 424.
 blasdaleanum—
 notes, (31) 150, 345; (32) 645.
 studies, (32) 51; (40) 345.
 chinensis n.sp., description, (30) 453.
 clavariaeforme—
 life history, (30) 745.
 notes, (37) 550.
 effect on—
 apple leaves, (26) 649; (30) 245; (32) 751.
 cedars, (28) 151.
 galls, studies, (35) 46.
 haraeum, notes, (31), 641.
 host relationships, (35) 244.
 japonicum—
 notes, (29) 547.
 teleutospore stage, (27) 648.
- juniperi-virginianae—
 effect on apple leaves, (29) 648.
 lipolytic action in teliospores of, (35) 225.
 notes, (28) 243.
 on apple, (39) 54.
 studies, (34) 54; (35) 49, 848.
- koreanse, studies, (34) 840.
- macropus—
 infection of apple leaves by, (29) 647.
 notes, (40) 53.
 studies, (34) 157.
 monograph, (26) 243.
 myricatum n. comb, description, (32) 341.
 new Asiatic, in Oregon, (34) 352.
 nootkatensis n.sp., description, (35) 844.
 review of investigations, (35) 650.
 sabinae, notes, (28) 429; (29) 155; (35) 454; (37) 550.
 secondary sporidia of, (30) 653.
 speciosum, aecidial host for, (26) 645.
 spp., galls of, (38) 448.
 spp., in Pennsylvania, (35) 351.
 spp., inoculation experiments, (38) 253.
 spp., notes, (30) 544.
 spp., on apples, (32) 644; (34) 444.
 spp., studies, (38) 151.
 tubulatum on junipers, (34) 546.
- Gynaikothrips uzeli affecting tobacco, (30) 658.
- Gypsa—
 flavilineata, notes, (33) 58.
 spp., notes, (27) 859.
- Gypsum—
 analyses, (27) 327; (32) 424; (38) 521; (39) 121.
 application to heavy soils, (33) 325.
 as corrector of soil acidity, (40) 815.
 decomposition in soils, (34) 217.
 deposits in Oklahoma, (30) 724.
 deposits in southwestern Virginia, (30) 724.
 determination in soils, (32) 806.
 diffusion in soils, (29) 128.
 effect on—
 alfalfa, (37) 33.
 ammonia-fixing power of soils, (27) 323.
 ammonification, (28) 724.
 availability of soil potash, (36) 519.
 concrete, (29) 891.
 fermentation of manure, (38) 19.
 germination of pine seed, (28) 843.

Gypsum—Continued.

- effect on—continued.
 germination of seeds, (29) 328.
 nitrification, (26) 527; (28) 217.
 nitrogen content of soy beans, (28) 721.
 potash solubility, (39) 521.
 protein content of soy beans, (34) 141.
 soil acidity, (37) 23.
 soil microorganisms, (34) 625.
 soil potash, (36) 625.
 soils, (26) 216; (39) 425, 821.
 solubility of phosphates, (28) 818.
 sulfofying power of soils, (37) 119.
 fertilizing value, (26) 725; (27) 321; (28) 137, 737; (33) 841; (34) 133, 725; (36) 23, 425; (37) 626, 825; (39) 222; (40) 440.
 for alfalfa, (40) 730.
 for black alkali soils, (39) 323; (40) 51.
 industry in 1913, (32) 127.
 industry in 1916, (39) 120.
 industry in United States, (34) 221.
 nitrogen absorption capacity, (28) 325.
 on alkali soil, (39) 215.
 production and use in 1913, (33) 26.
 production and use in United States, (31) 125; (36) 124.
 review of investigations, (27) 128.
 use against beet rots, (30) 244.
 use on California soils, (30) 627.
 use on reclaimed waste land, (28) 736.
 uses, (32) 127.

Gypsy moth, *see* Gipsy moth.

Gyrococcus flaccidifex—

- n.g. and n.sp., description, (27) 661.
 notes, (28) 254.

Habernaria obtusata, pollination by mosquitoes, (30) 658.

Habichuela—

- cimarrona, culture, (34) 736.
 parada, culture, (34) 736.

Habrobracon—

- brevicornis—
 parasitic on bee moth, (26) 657.
 studies, (39) 566.
 hebetor—
 notes, (27) 564; (29) 658.
 parasitic on fig moth, (26) 248.
 johannseni, notes, (36) 155, 655.
 n.sp. on cotton bollworm, (33) 159.
 n.spp., descriptions, (32) 852.
 simonovi n.sp., description, (33) 658.

Habrocytus—

- fasciatus, notes, (29) 562.
 medicaginis n.sp., description, (35) 262.
 medicaginis, studies, (36) 259.
 North American species, (37) 162.
 obscuripes, notes, (36) 259.
 piercei n.sp., description, (26) 352.
 sp., notes, (26) 151.
 thyridopterigis, notes, (27) 558.

Habrolepidoidea depressa n.sp., description, (36) 557.

Habronema—

- larvae infestation, (40) 586.
 microstoma, notes, (29) 83.
 muscae, life history, (26) 255; (29) 82.

Habronemiasis, cutaneous, in horses, (37) 279.

Hackberry—

- as a hedge plant, (37) 241.

insects affecting, (37) 461.

Hadena—

- basilinea, notes, (36) 552.
 didyma (oculea), notes, (27) 552.
 fractilinea, notes, (33) 252.
 spp., notes, (27) 659; (39) 765.
 turbulenta, notes, (33) 58.

Hadronema, species, (39) 657.

Hadronotus javensis n.sp., description, (32) 348.

Hadrotettix trifasciatus, remedies, (36) 55.

Hadrotrichum—

- piri n.sp., notes, (27) 750.

populi, notes, (37) 550.

Haemaphysalis—

- chordellis, notes, (33) 351.
 monograph, (35) 263.
 n.spp., descriptions, (27) 361.
 punctata, notes, (28) 82.
 punctata, occurrence in Apenrade, (26) 353.
 silacea n.sp., description, (26) 460.
 spp., notes, (27) 865; (29) 58.

Haematobia—

- irritans, *see* Horn fly.
 sanguisugens, life history, (35) 760.
 serrata, *see* Horn fly.

Haematococcus pluvialis, carotinoid content, (31) 803.

Haematopinus—

- asini, biology and remedies, (38) 184.
 bituberculatus, relation to surra in carabaos, (28) 756.
 microcephalus n.sp., description, (26) 655.
 spp. on cattle, (40) 651.
 suis advencticus n.var., description, (26) 655.
 suis, studies, (40) 652.

Haematopota, parasitic flagellates of, (26) 84.

Haematosphion inodora, notes, (29) 454.

Haemithacea erythrostoma, parasitic on grapevine sphinx, (26) 250.

Haemogamasus—

- oudemansi n.sp., description, (32) 353.
 sanguineus n.sp., description, (34) 66.
 Haemogregarina spp., notes, (26) 883.
 Haemonchus contortus—
 anatomy and life history, (35) 678.
 in Guam, (35) 878.
 in Philippines, (37) 277.
 life history, (29) 476.
 notes, (27) 182; (28) 481; (37) 779; (40) 88.

Haemoproteus—

- columbae, sporogony, (34) 855.
 columbae, transmission, (35) 678.
 danilewski, notes, (26) 883.

Haemosporidia, classification, (39) 163.

Haemostrngylus vasorum, notes, (30) 279.

Haemotrichomonas n.g. and n.spp., notes, (38) 784.

Hail—

- as affected by forests, (29) 842.
 effect on trees, (37) 250.
 formation, theories, (34) 208.
 in Kansas, (38) 209.
 Maryland, (34) 413.
 Paris region, (36) 208, 719.
 the Tropics, (27) 617.
 United States, (37) 512.
 injury to cereals, (33) 127.
 injury to cultivated plants, (35) 734.
 insurance, (40) 894.
 insurance—
 in Alberta, (39) 496.
 Denmark, (27) 704.
 England and Wales, (29) 189.
 France, (26) 388; (29) 790.
 New England, (36) 192.
 North Dakota, (37) 594.
 various countries, (36) 593.
 report on, (26) 516.
 statistics, (40) 894.
 protection, (27) 15; (31) 22.
 protection—
 electric niagaras for, (30) 511; (34) 208.
 electrical devices for, (31) 416.
 experiments, (40) 118.
 in France, (30) 713.
 squall in Baltimore, (37) 807.
 theories, (37) 512.
 wounds on fruits, notes, (28) 826.
 wounds on woody plants, studies, (29) 131.
 Hailstones, unusual formation, (27) 617; (38) 210.
 Hailstorm—
 at Ballinger, Texas, (37) 513.
 in Kansas, (27) 616.
 of August 8, 1917, (38) 811.
 on James Island, S. C., (29) 721.
 remarkable, in region of Provins, (40) 512.
 Hailstorms—
 and hail prevention in France, (35) 318.
 in Belgium, (30) 17.
 prevention, (27) 719.

Hair—

- and hair colors, notes, (27) 369.
 and hair pigments, physiological character, (32) 361.
 and wool, disinfection, (40) 783.
 availability of nitrogen in, (38) 423.
 dog's, hydrolysis of (26) 22.
 tankage, availability of nitrogen in, (26) 523, 725.
 waste, analyses, (28) 523.
 waste, fertilizing value, (33) 125.

- Hairlessness**—
in newborn animals, (39) 187, 790.
in pigs, (39) 187; (40) 185.
- Hairy root**, notes, (31) 449.
- Hairy vetch**, *see* Vetch.
- Hakuunboku seed**, oil of, (37) 109.
- Halia wavarla**, notes, (30) 53.
- Halibut**—
creatinin content, (31) 760.
muscle, lysin content, (31) 559.
shipping long distances, (35) 162.
- Halicetoxenus**, British, synopsis, (39) 664.
- Haliectus** spp., bionomics, (35) 468.
- Halids**, method for titration, (38) 204.
- Halisidota**—
caryae, studies, (38) 464.
spp., notes, (39) 761.
spp. on shade trees, (39) 561.
- Halogens**—
determination in organic compounds, (34) 806.
effect on action of enzymes, (28) 609.
- Halophytes**—
physiology, (40) 424.
transpiration in, (27) 522.
- Halos**—
notes, (32) 25, 210, 810; (34) 614; (37) 807; (38) 511.
observations, (34) 413.
relation to precipitation, (35) 115.
relation to weather, (34) 207; (39) 511.
- Haltica**—*see also* *Aldica* and *Flea-beetle*.
ampelophaga in France, (30) 458.
bimarginata, notes, (29) 252.
carinata, notes, (26) 753; (35) 656.
chalybea, *see* Grape flea-beetle.
evicta, notes, (32) 556.
foliacea, notes, (33) 746.
foliacea, outbreak, (32) 656.
jamaicensis, life history, (38) 864.
pagana injurious to strawberries, (30) 758.
probeta, life history and habits, (36) 859.
spp., notes, (29) 761.
- Halticini** attacking Cruciferae in central Europe, (30) 160.
- Halticoreus platyceri**, notes, (39) 557.
- Halticus citri**—
in Maryland, (38) 154.
notes, (28) 854.
- Ham beetle**, red-legged, notes, (28) 161.
- Hamburger steak**, bacteriological analyses, (31) 854.
- Hamden County Improvement League of Massachusetts**, (30) 192.
- Hamper**, Long Island home, (30) 295.
- Hampton Institute**, notes, (35) 197; (40) 99.
- Hams**—
curing, (27) 279, 763, 875; (28) 890.
curing and smoking, (28) 466.
curing in Prague, (29) 573.
curing on the farm, (30) 316, 373.
preparation, (26) 599.
preservation, (29) 312.
Westphalian, preparation, (27) 363.
- Hangul**, hybridization experiments, (29) 171.
- Hanoverian Veterinary High School**, notes, (29) 597.
- Hapalophragmium ponderosum**, notes, (38) 848.
- Haplogonotopus americanus**, studies, (40) 265.
- Haplographium manihoticola** n.sp., description, (37) 252.
- Haplopacha puncti-fascia**, notes, (26) 348.
- Haplosporella crypta** n.sp. on Hevea, (39) 452.
- Haplothrips**—
graminis n.sp., description, (27) 454.
n.sp., description, (37) 258.
- Hardback grubs**, parasites of, (40) 265.
- Hardpan**—
formation, (27) 416.
in Norway soils, (26) 620.
- Hardwood**—
destructive distillation, (27) 745; (32) 48; (36) 844; (38) 808.
distillation on Pacific coast, (33) 615.
distillation products, marketing, (29) 544.
distillation, temperature control in, (34) 48.
forests, northern, (34) 152.
resistance to creosote, (38) 892.
supply of New South Wales, (28) 51.
- Hardwoods**—
clearing out, (40) 842.
management in eastern France, (29) 842.
of central Europe, manual, (31) 538.
second-growth, in Connecticut, (27) 243.
- Hardwoods**—Continued.
second-growth, management, (31) 640.
volume tables for, (30) 744.
- Hares**—
Belgian, raising, (27) 374.
destructive to trees in western Canada, (37) 758.
- Hariali grass**, eradication, (29) 592.
- Haricot beans**—
hydrocyanic acid in, (33) 866.
stachyose in, (28) 761.
- Harlequin**—
beetle, notes, (28) 250.
cabbage bug—
destruction by vegetable parasites, (28) 354.
notes, (26) 147; (27) 53; (28) 752; (33) 58, 746; (34) 451; (35) 255; (38) 653.
studies, (39) 657.
fruit bug, notes, (27) 858.
- Harmolita tritici**, *see* Wheat joint worm.
- Harmoloba fumiferana**, *see* Spruce bud moth and spruce budworm.
- Harmonia similis**, notes, (33) 58.
- Harmostes** spp. in United States, (38) 764.
- Harness wounds**, treatment, (39) 85.
- Harpalus** sp., notes, (32) 556.
- Harpiphorus** spp., notes, (26) 147.
- Harrisina** sp., notes, (26) 452.
- Harrow**, weeder, for dry farming, (26) 95.
- Harrow**, care and repair, (39) 292.
- Hartigia abdominalis**, investigations, (29) 260.
- Hartigiella laricis**, notes, (34) 849.
- Harvest**—
hands, city volunteer, (40) 389.
mite, notes, (33) 354.
- Harvester ant**, notes, (29) 453.
- Harvesters**, grain, motor drawn and operated, (31) 188.
- Harvesting**—
and planting dates, (40) 209.
implements, care and repair, (39) 292.
machinery, fire safeguards for, (39) 393.
machinery for corn, (39) 794.
- Harziella castaneae**, studies, (40) 851.
- Hasstlesia tricolor**, notes, (35) 684.
- Hat making**, notes (28) 694.
- Hatch, W. H.**, dedication of memorial to, (34) 8.
- Hauling**—
animal v. mechanical power for, (35) 292.
wagon and motor, cost, (40) 93.
- Hautoria**, purpose of, (34) 627.
- Hawaii**—
College, notes, (27) 397; (32) 395; (36) 295, 694; (37) 196; (39) 95.
Federal Station, notes, (34) 495; (40) 695.
Station—
index to publications, (27) 599.
notes, (26) 194; (28) 494, 797; (30) 600; (31) 795; (33) 699; (35) 397.
report, (27) 196; (29) 299; (30) 899; (32) 796; (35) 595; (37) 195; (38) 899.
work of, (38) 604.
- Sugar Planters' Station**—
index to bulletins, (38) 497.
notes, (29) 97; (32) 694; (33) 99; (37) 497; (39) 500.
report, (38) 796.
- Hawaiian bird reservation**, notes, (27) 549.
- Hawk**, broad-winged, monograph, (26) 245.
- Hawk**, western red-tailed, feeding habits, (30) 654.
- Hawkbit**, description, (35) 642.
- Hawks**—
notes, (27) 355.
of Canadian Prairie Provinces, (40) 255.
of France, book, (26) 452.
- Hawkweed**, description, (35) 642.
- Hawthorn**—
aphis, injurious to apples, (26) 247.
rust, notes, (26) 52.
sawfly leaf miner, studies, (34) 456, 657.
sawfly, notes, (30) 657.
seeds, after-ripening, (28) 226; (29) 134.
- Hawthorns**—
of upper South Carolina, (36) 140.
variability and hybridization in, (36) 630.
- Hay**—*see also specific kinds*.
Alpine, of Lanzo, analyses, (26) 72.
analyses, (26) 45; (37) 236.
and fresh grass, comparative feeding value, (35) 372.
and grain elevator, description, (30) 690.

Hay—Continued.

- and pasture region east of Rockies, climatic features, (40) 117.
- as affected by—
 - long storage, (32) 363.
 - precipitation and temperature, (28) 41.
 - time of cutting, (27) 234.
- as carrier of foot-and-mouth disease, (33) 179.
- as human food, (34) 256.
- calculator, (33) 431.
- caps, (37) 699; (39) 687.
- changes in during storage, (30) 525.
- composition, (28) 463.
- composition as affected by—
 - fertilization and cultivation, (28) 633
 - fertilizers, (27) 35.
 - rain and dew, (26) 235.
 - time of cutting, (28) 634.
- composition, factors affecting, (30) 334.
- consumption, bulk of manure produced by, (40) 126.
- cost of production, (33) 831; (35) 691; (37) 191; (40) 292.
- critical period of growing season, (39) 811.
- crops—
 - following wheat, fertilizer experiments, (39) 540.
 - for Texas, (37) 827.
 - production in New York, (39) 532.
 - seeding, (38) 33.
- culture—
 - experiments, (26) 329, 422; (29) 138, 427, 736; (33) 830.
 - in Philippines, (30) 230.
 - in the South, (33) 332.
 - on a small holding, (30) 90.
 - on granitic soils, (32) 126.
 - on moor soils, (39) 437.
- cured in various ways, digestibility, (34) 371.
- curing, (26) 235.
- curing—
 - and harvesting, (33) 38.
 - devices, (30) 191.
 - in wet weather, (37) 189.
 - on trucks, (39) 440.
- damaged by rain, composition, (27) 170.
- digestibility, (28) 363, 436; (32) 167, 363.
- effect on milk and butter, (34) 570.
- English, digestibility, (31) 766.
- ether and chloroform extracts of, (28) 69.
- ether extract of, (28) 108.
- fall sowing, (33) 98.
- fall-sown, (34) 95.
- feeding value, (26) 574.
- fermenting power, (31) 413.
- fertilizer experiments, (26) 31, 422, 535, 629, 630, 725; (27) 532; (28) 124, 325, 735; (29) 228, 427, 517, 530, 631, 728; (30) 133, 134, 428, 519, 626, 632; (31) 829; (33) 330; (34) 22, 131, 294; (35) 430, 520; (40) 134.
- fever—
 - relation to agmantin, (40) 608.
 - toxins and serum, (32) 79.
- flour, analyses, (34) 164.
- from an "alkali flat," analyses, (29) 270.
- grades, (34) 528.
- grain, production, (36) 436.
- harvesting with sweep rake, (33) 88.
- heating during curing, (35) 312.
- irrigation experiments, (29) 631.
- making, (27) 599; (33) 299; (39) 231, 794.
- making, cost data, (38) 793.
- making machinery in England, (38) 190.
- market, notes, (28) 41.
- marketing, (26) 235; (36) 392.
- marsh, digestibility, (32) 363.
- meal, preparation and use, (36) 367.
- measuring for feed, (39) 834.
- measuring in stacks, (29) 532; (33) 831; (36) 227.
- microflora as affected by temperature, (33) 467.
- mixed—
 - analyses, (28) 169.
 - cost of production, (34) 137.
 - energy value, (33) 72.
- mixtures, tests, (38) 830.
- moor, causing excessive licking in cattle, (32) 567.
- moor, digestibility, (32) 363.
- native, analyses, (29) 370; (34) 467.
- native, digestibility, (32) 770.

Hay—Continued.

- phosphates for, (39) 520.
 - production in Vermont, (29) 736.
 - production, studies, (39) 134.
 - racks, construction, (28) 386.
 - rotation experiments, (38) 133.
 - spontaneous combustion, (37) 788.
 - spontaneous heating of, (26) 767.
 - stackers, (40) 788.
 - tender and rake combination, description, (27) 90.
 - time of cutting, (39) 633.
 - tonnage tables, (33) 228.
 - treatise, (28) 829.
 - varieties, (29) 228.
 - wild, analyses, (33) 469.
 - yield as affected by—
 - ground water level, (29) 531.
 - time of cutting, (28) 634.
 - yield, estimating, (26) 434.
 - yields in Australia, (38) 133.
 - yields in Chester Co., Pennsylvania, (39) 621.
 - Zellers' table for, (33) 831.
- Haze—
- dense, of June 10-11, 1912, (28) 315.
 - effect on evaporation, (29) 721.
 - of July and August, 1916, (36) 419.
 - of May, 1914, (32) 25.
 - over southwestern United States, (36) 19.
 - relation to atmospheric humidity, (29) 120.
- Hazel blight, treatment, (37) 755.
- Hazelnuts—
- culture in Messina, (33) 540.
 - culture in various countries, (36) 142.
 - forcing experiments, (28) 435.
 - grafting, (31) 443.
 - insects affecting, (26) 246.
 - microscopic identification, (28) 565.
 - notes, (35) 145.
 - varieties, (28) 238; (30) 742; (37) 143.
 - yield and cultural value, (26) 337.
- "Head grit" in lambs, (34) 383.
- Headache—
- powders, studies, (27) 365.
 - tablets, methods of analysis, (27) 499.
- Headgates, designs for, (30) 85, 287.
- Health—
- administration, cooperative, in small towns, (32) 254.
 - as affected by saccharin, (26) 257.
 - biscuits, examination, (30) 664.
 - certificates, interstate recognition of, (34) 185.
 - public, *see* Public health.
- Heart muscle as beriberi preventive, (28) 761; (31) 762.
- Heartwood borer, notes, (28) 156.
- Heat—*see also* Temperature.
- and disinfectants, combined action on soils, (31) 620.
 - center of rabbits' brain, puncturing, (29) 479.
 - conductivity of soils, (27) 215.
 - destruction of lice and mites by, (38) 859.
 - development by plants, (31) 323.
 - effect on—
 - availability of phosphate rock, (31) 823.
 - cane sugar dissolved in milk, (34) 164.
 - catalytic power of soils, (28) 118.
 - concentration of soil solution, (37) 719.
 - creaming of milk, (36) 674.
 - emulsin, (26) 310.
 - germination of seeds, (27) 220, 243.
 - gluten, (26) 866.
 - habits of beans, (30) 343.
 - insect larvae, (28) 752.
 - insects, (27) 856.
 - lipoids in foods, (29) 365.
 - mineral constituents of soils, (31) 25.
 - nutritive value of food, (37) 467.
 - nutritive value of milk and its products, (34) 368.
 - peptic and tryptic proteolysis, (31) 107.
 - peroxydiastase of wheat, (26) 866.
 - protozoa, (31) 26.
 - rinderpest-immune bodies, (32) 476.
 - sap, (31) 522, 627.
 - seeds and young plants, (33) 629.
 - soil phosphorus, (27) 122.
 - soil protozoa, (36) 422.
 - soils, (26) 618; (30) 419; (32) 721; (34) 722; (35) 20, 22, 138, 515, 722.

- Heat**—Continued,
 effect on—continued,
 specificity of precipitins, (26) 482.
 starch grains, (29) 409.
 trees, (31) 348; (32) 144.
 woody plants, (31) 343.
 evolution by wounded plants, (27) 830.
 from the stars, (32) 810.
 insecticidal value, (28) 157; (34) 253.
 leaf injury or loss due to, (35) 243.
 liberation in plant respiration, (27) 28.
 production—
 and body surface, relation, (36) 64.
 by leaves, (28) 630.
 in physiological, bacteriological, or ferment
 actions, (26) 872.
 of the body, (32) 664; (40) 868.
 radiation, nocturnal, (32) 419.
 regulation as affected by sugar injections, (32)
 859.
 regulation in man, (30) 264.
 relation to summer diarrhea of infants, (34) 462.
 solar, seasonal variations in, (34) 415.
 transmission through building materials, (31)
 688; (38) 87, 492.
 use against—
 bee diseases, (31) 255.
 insects, (34) 50, 653.
 mill insects, (30) 155.
- Heath**—
 deformation on the seashore, (32) 825.
 grass, purple, ecology of, (33) 527.
 hens on Marthas Vineyard, (30) 248.
 reclamation in Netherlands, (31) 691.
- Heather**, burning for grouse and sheep, (40) 667.
- Heating**—
 and ventilation, treatise, (29) 390.
 by electricity, (30) 862; (32) 65; (33) 67, 461; (37)
 387.
 modern practice in, (30) 893; (31) 387.
 of buildings, address on, (28) 213.
 paper on, (31) 189.
 system, domestic, wet coal for, (38) 87.
 system, hot water, forcing circulation in, (31)
 292.
 system, hot water, piping for, (30) 893.
 systems for farm houses, (36) 491, 590; (38) 492.
- Healus lineatus**, notes, (27) 859.
- Hectopsylla psittaci**, notes, (28) 753.
- Hedemarken Experiment Station**, report, (30) 134.
- Hedera**—
 formation of anthocyanin in, (30) 432.
 helix, intumescences in, (26) 545.
- Hedge**—
 clippings as source of potash, (37) 817
 plants, tests, (37) 241.
- Hedgehog**—
 male generative cycle in, (27) 770.
 morphology of blood, (28) 777.
- Hedges**—
 artificial, tests, (30) 134.
 culture, (32) 839.
 planting, (33) 291, 442.
- Hedrobracon hebetor**, notes (27) 564.
- Hedychium coronarium** in Brazil, (39) 638.
- Hedylus** spp., parasitic on fruit flies, (31) 456.
- Hedysarum**—
 coronarium—
 as a forage crop, (32) 41.
 culture experiments, (30) 228, 632.
 insects affecting, (26) 147.
 nitrates in, (36) 329.
 tests, (26) 133.
 humile, analyses, (33) 466.
- Heeria mucronata**, analyses and digestibility, (27)
 871; (32) 167.
- Hegari**—
 culture experiments, (39) 434; (40) 433.
 dwarf, culture in eastern Oregon, (38) 432.
- Heifers**—
 age for breeding, (31) 371.
 as affected by plane of nutrition, (35) 868.
 breeding, development, (40) 369.
 care and management, (34) 471.
 conformation in relation to future production,
 (39) 782.
 cost of raising, (33) 765; (34) 470; (36) 76, 872;
 (38) 176; (39) 782.
- Heifers**—Continued.
 dairy, wintering, (39) 783.
 effect of early calving, (40) 877.
 factors affecting development, (31) 371; (33) 274;
 (35) 871; (38) 682; (40) 877.
 feeding experiments, (27) 871; (28) 264, 873; (32)
 863; (36) 873.
 French Canadian, cost of raising, (40) 775.
 open shed, v. stable for, (38) 680.
 pasturing experiments, (40) 471.
 raising, (36) 572.
 selection for milk production, (38) 74.
 virgin, lactation in, (28) 372.
 winter feeding, (39) 482.
 winter rations for, (38) 681.
- Helipus**—
 bonelli, notes, (30) 454.
 lauri, notes, (28) 357; (39) 264.
- Helenium tenuifolium**, toxicity, (38) 883; (40) 778.
- Heleniums**, varieties at Wisley, (33) 536.
- Helianthi**, yields, (30) 134.
- Helianthus**—
 annuus, forms of, (30) 140.
 annuus, water relations, (40) 427.
 culture experiments, (29) 331.
 inheritance studies, (40) 131.
 spp., betains in, (27) 203.
 strumosus, culture experiments, (30) 632.
 tuberosus, varieties, (40) 827.
 tubers as a source of alcohol, (27) 616.
 varieties at Wisley, (33) 536.
- Helicella itala**, insect enemy, (39) 766.
- Helicobasidium monipa**, notes, (28) 241.
- Helicobia helicis**, notes, (33) 749.
- Helicomycetes sphaeropsisidis**, notes, (36) 251.
- Helicosporium nymphaeae** n.sp., description,
 (36) 752.
- Helinus ovatus**, analyses and digestibility, (27) 871;
 (32) 167.
- Heliophila**—
 albilinea, *see* Army worm, wheat-head.
 diffusa, notes, (26) 59.
 spp. in southern Texas, (34) 453.
 unipuncta, *see* Army worm.
- Heliothis obsoleta**, *see* Cotton bollworm.
- Heliothrips**—
 fasciatus—
 control, (39) 256.
 internal parasite of, (26) 858.
 on olive, (38) 157.
 studies, (28) 249.
 femoralis, studies, (36) 153.
 haemorrhoidalis, *see* Greenhouse thrips.
 n.sp., description, (37) 258.
 phaseoli n.sp., description, (27) 757.
 rubrocinctus, notes, (27) 857; (28) 250 ;(35) 254,
 357; (37) 357, 461; (40) 856.
 rubrocinctus, studies, (28) 353.
 sp., affecting tea, (34) 652.
 spp., in Trinidad, (40) 649.
- Heliotropism**—
 as affected by salts, (34) 333.
 in animals and plants, identity, (33) 129.
 negative, in *Puccinia ramhni*, (33) 330.
- Helix humboldtiana**, notes, (37) 755.
- Hellebore**—
 analyses, (27) 441.
 false, stock poisoning by, (39) 787.
- Hellula undalis**, *see* Cabbage webworm.
- Helminthiasis**, nodular, in cattle, studies, (28) 181.
- Helminthology**, notes, (33) 152.
- Helminthosporium**—
 acrothecioides n.sp., description, (40) 155.
 curvulum n.sp., notes, (37) 148.
 echinulatum, notes, (35) 154.
 gramineum—
 notes, (28) 150; (29) 243; (32) 544; (33) 146.
 studies, (30) 846.
 treatment, (29) 845; (32) 145, 341; (35) 47;
 (36) 247; (37) 247.
 infection of wheat by, (26) 747.
 mayaguezense n.sp. on *Paspalum*, (39) 248.
 n.spp., descriptions, (27) 848.
 oryzae, notes, (28) 647.
- sacchari**—
 n.sp., description, (30) 650.
 notes, (34) 49; (40) 157.
 studies, (38) 851.

Helminthosporium—Continued.

- sp. on coconut, (38) 758.
- sp. on corn, (34) 844.
- spp., notes, (27) 45; (29) 645.
- spp., treatment, (31) 147, 446.
- terres, ascigerous stage, (33) 345.
- terres, longevity, (39) 549.
- terres, studies, (29) 750.
- theobromae n.sp., description, (37) 755.
- turcicum, studies, (34) 844.

Helminths—

- bactericidal properties, (30) 279.
- dissemination by house flies, (36) 657.
- in cattle and goats in Philippines, (37) 277.
- parasitic in cattle, (27) 886.
- parasitic in equines, (27) 583, 888.
- parasitic, photomicrographs of, (29) 478.
- pathogenic rôle of, (31) 81.
- toxic product, studies, (40) 84.

Heliochara communis, notes, (27) 859.**Helodrilus**—

- parvus as a host of fowl nematode, (30) 485.
- welchi n.sp., description, (40) 267.

Helopeltis—

- antonii and H. theivora, notes, (37) 55.
- relation to cacao ant, (39) 156.
- sp., notes, (26) 354; (33) 153.
- spp., studies, (30) 854; (38) 259.
- theivora, notes, (31) 850.

Helorus sp., notes, (31) 758.**Helotiidae**, catalogue, (26) 560.**Helotium aeruginosum**, notes, (29) 649.**Hemaenosoidea oculata** n. g. and n.sp., description, (36) 259.**Hemagglutination**, review and bibliography, (26) 481.**Hemagglutinin**—

- in blood of transfused rabbits, (39) 584.
- Euphorbia, (30) 503.
- human milk, (29) 175.
- plants, (26) 431.

Hemagglutinins—

- of plant origin, (26) 676.
- vegetable, notes, (30) 204.
- vegetable, studies, (31) 773.

Hemaglobin, properties of, (30) 201.**Hematic phenomena** in anaphylaxis, (40) 880.**Hematology**—

- of domestic animals, status, (31) 286.
- of normal and cholera infected hogs, (32) 582.
- textbook, (38) 481.

Hematopinus tuberculatus, notes, (28) 158.**Hematoporphyrin** in ox muscle, (36) 109.**Hematotoxins**, bacterial, notes, (26) 676; (32) 78.**Hematuria**—

- bovine, in British Columbia, (27) 576.
- bovine, symptoms and pathology, (38) 486.
- cystic, in cattle, (30) 383.
- in cattle, investigations, (26) 586, 881.
- notes, (31) 176.
- studies, (36) 180.

Hemerobius—

- gossypii, studies, (29) 355.
- pacificus, notes, (28) 457; (34) 357.
- pacificus, parasitic on red spider, (32) 157.
- sp. destructive to purple scale, (26) 757.

Hemerocampa—

- definita, notes, (30) 655.
- leucostigma, see Tussock moth, white-marked.

Hemerophila pariana, notes, (38) 60; (40) 648.**Hemicellulose**—

- humification, (38) 26.
- in roots, rhizomes, and tubers, (30) 130.

Hemichionaspis—

- aspidistriae, see Fern scale.
- minor, notes, (26) 247; (27) 54; (28) 159; (29) 359, 654; (33) 59; (40) 453.

Hemichroini, notes, (40) 761.**Hemileia vastatrix**—

- control, (40) 751.
- effect on coffee culture in Java, (27) 153.
- notes, (29) 851; (32) 548; (34) 540, 744, 848; (36) 347, 746; (37) 349, 453, 551; (39) 152, 857.
- treatment, (28) 148; (34) 545; (35) 45, 353; (38) 647.

Hemileuca oliviae—

- larvae, poisonous spines, (39) 561.
- studies, (35) 259; (36) 55.

Hemileucidae, monograph, (32) 850.**Hemiptera**—

- American, bibliography, (31) 454.
- bloodsucking, of Central America, (36) 356.
- in America north of Mexico, (36) 550; (38) 763.
- in Florida, (34) 550.
- intracellular symbiosis, (27) 861.
- paleartic, catalogue, (30) 455.
- polymorphism in, (27) 655.

Hemiptera-Heteroptera—

- of Maine, (33) 59.
- of New England, (40) 260.

Hemipterological faunas of Europe and North America, (27) 655.**Hemisarcopites malus**—

- notes, (27) 861.
- relation to control of oyster-shell scale, (39) 162.

Hemispherical scale, notes, (28) 854; (34) 652.**Hemiteles**—

- crassicornis, notes, (33) 862.
- fulvipes, notes, (38) 768.
- n.sp., notes, (35) 465.

Hemiteles, notes, (27) 562; (29) 456.**Hemitheinae**, notes, (27) 862.**Hemlock**—

- bark, use for paper specialties, (36) 417.
- borer, spotted, notes, (33) 252.
- disease, new, (39) 153.
- diseases in southern Appalachians, (31) 646.
- eastern, studies, (32) 542.
- importance and range, (28) 440.
- Japanese, scale insects affecting, (26) 248.
- poison, notes, (30) 145.
- pulpwood from, (27) 541.
- seedlings, root rot of, (34) 546.
- timber nailed joints, tests, (38) 892.
- unit stresses for, (36) 91.
- water, eradication, (27) 733.
- water, toxicity, (29) 111.
- western—
 - analyses, (38) 309.
 - Echinodontium-infected, thinning, (40) 842.
 - heart rot, (40) 159.
 - mechanical properties, (28) 544.
 - notes, (27) 846.
 - stimulating seed production in, (38) 644.

Hemocyanin, hydrolysis of, (26) 22.**Hemocytometer**, use, (36) 676.**Hemoglobin**—

- and chlorophyll, relation, (32) 711.
- detection in urine, (26) 114.
- determination, (29) 408.
- ox, hydrolysis, (28) 607.
- solution, proagglutinoïd-like, reaction (40) 779.

Hemoglobinemia—

- of cattle in Sweden, (40) 585.
- of horses, notes, (26) 683.
- paroxysmal, notes, (26) 581.

Hemoglobinuria—

- of cattle, immunization, (26) 285.
- cattle in Chile, (33) 774.
- cattle in Italy, (40) 782.
- cattle, notes and treatment, (27) 378.
- horses, treatment, (26) 588.

Hemolymph nodes of sheep, (32) 82.**Hemolysin** production, relation to culture medium, (26) 481.**Hemolysins**—

- and proteolysins, relation, (28) 286.
- production, (29) 581.
- production by streptococci, (28) 179; (33) 83.
- serum, in goats, studies, (27) 476.

Hemolytic—

- complement, preservation, (31) 578.
- reaction, effect of chemicals on, (36) 878.

Hemorobius pacificus, notes, (32) 651.**Hemorrhage**, intractable, treatment, (37) 177.**Hemorrhagic septicemia**, see Septicemia.**Hemp**—

- and flax fiber, microscopic differences, (26) 828.
- as affected by lithium salts, (28) 526.
- as green manure, (26) 631; (27) 337.
- as weed eradicator and money crop, (28) 834.
- Asiatic v. Italian, (31) 526.
- binder twine from, (27) 534.
- blooming of, (35) 640; (36) 523.
- broom rape on, (39) 147.
- change of sex in, (36) 736.
- Chinese, fertilizer experiments, (33) 432.
- common, geographical distribution, (26) 335.
- cost of production, (35) 691.
- culture, (31) 524; (36) 437; (39) 837.

Hemp—Continued.

- culture—
 - and manufacture, (30) 229, 831.
 - experiments, (34) 229; (37) 227; (38) 336, 634; (40) 231.
 - in Antigua, (38) 336.
 - Arizona, (32) 226.
 - France, (37) 830.
 - Italy, (30) 229, 232.
 - Jamaica, (32) 229.
 - Wisconsin, (35) 528; (36) 828.
 - on moorland, (30) 229.
- Deccan, production in Africa, (40) 238.
- destruction of Canada thistles and quack grass by, (27) 31.
- effect on following crop, (40) 734.
- fertilizer experiments, (26) 129; (30) 232; (31) 133; (35) 523; (38) 634.
- fiber, strength of, (29) 313.
- fiber, studies, (38) 646.
- flea-beetle, biology and remedies, (30) 255.
- floral anomalies in, (26) 432; (27) 827.
- fungus disease of, (32) 146.
- hurds as paper-making material, (36) 17.
- Indian, rubber from, (30) 614.
- industry—
 - in India, (37) 233.
 - in New Zealand, (39) 638.
 - in Wisconsin, (39) 633.
 - wastes, fertilizing value, (37) 219.
- insects affecting, (31) 332; (38) 54.
- Italian, production and manufacture, (33) 530.
- Manila—
 - culture and grading, (32) 828.
 - culture in Philippines, (30) 230.
 - standard grades, (36) 634.
- monograph, (31) 332.
- notes, (29) 330.
- old treatise on, (40) 628.
- pulp, fertilizing value, (40) 629.
- purple-leaved mutation, (28) 834.
- Queensland, culture in the South, (34) 35.
- retting, review of literature, (38) 715.
- seed—
 - amino acid in, (33) 665.
 - cake, analyses, (36) 571.
 - cake, effect on milk and butter, (34) 471.
 - distribution of nitrogen in, (36) 269.
 - edestin, hydrolysis of, (26) 22.
 - for chicks, (34) 871.
 - germination, (33) 133.
 - germination as affected by green manures, (33) 331.
 - germination energy of, (29) 538.
 - germination tests, (29) 740.
 - meal, analyses, (33) 170.
 - oil, detection, (29) 613.
 - viability as affected by age, (31) 624.
- sex anomalies in, (29) 27.
- sex inequality in, (31) 526.
- sisal—
 - analyses and valuation, (30) 138.
 - culture experiments, (30) 632.
 - date of cutting test, (27) 234.
 - disease of, (33) 850, 851.
- standardization, (30) 831.
- sun—
 - as green manure, (27) 637; (36) 232, 624, 737; (38) 220.
 - composition and use, (27) 727.
 - culture and improvement, (28) 633.
 - culture experiments, (28) 633; (37) 824; (38) 336.
 - description, (30) 828.
 - notes, (27) 36.
 - utilization of hydrocyanic acid by, (31) 730.
 - varieties, (30) 434; (31) 133; (38) 634.
 - water requirement, (32) 226.
- Hen flea, notes, (32) 757; (33) 354; (35) 58; (36) 554.
- Hen louse, *see* Menopon pallidum.
- Henbane—
 - breeding experiments, (30) 631.
 - improvement by selection, (32) 143.
- Hendersonia—
 - coffea, notes, (38) 51.
 - diploidioides, studies, (33) 545.
 - dotartiae n.sp., description, (35) 844.
 - eucalypticola n.sp., description, (27) 548.
 - herpotricha, notes, (32) 843.
 - herpotrichoides, notes, (28) 445.

Hendersonia—Continued.

- opuntiae, studies, (27) 352.
- rubi, notes, (27) 448; (34) 55, 241.
- sacchari n.g. and n.sp., description, (30) 650.
- sacchari, notes, (34) 49.
- sp. on mangosteen, (35) 153.
- Henequen—
 - binder twine from, (27) 534.
 - chemistry of, (27) 717.
 - fiber, strength of (29) 313.
- Henna, studies, (35) 449.
- Henrich, George, biographical notes, (29) 121.
- Hens—*see also* Chickens, Fowls, and Poultry.
 - abnormality of oviduct in, (33) 471.
 - artificial insemination in, (31) 370.
 - artificial light for, (34) 669, 770; (36) 374.
 - average productive life of, (32) 73.
 - correlation between form and function, (28) 73.
 - cost of keeping, (33) 76.
 - crowing, (34) 268.
 - determination of age, (32) 470.
 - dwarf egg production by, (36) 73.
 - early and late hatched, (39) 275, 780.
 - egg production, *see* Egg production.
 - external indications of egg production, (35) 480.
 - feed requirements, (33) 793.
 - feeding, (33) 98.
 - feeding experiments, (27) 773; (28) 773; (29) 672; (30) 175; (31) 270, 473; (32) 571; (33) 572; (34) 175, 177, 179, 268; (35) 171, 274, 479, 569, 773; (36) 71, 172, 373, 570, 769, 869; (37) 70, 268, 271, 682, 768, 774, 871; (38) 373.
 - feeding for egg production, (28) 773; (31) 569; (33) 672.
 - fish meal for, (35) 769.
 - forced molting of, (32) 469.
 - histology of oviduct, (28) 575.
 - in city back yards, (39) 176.
 - individual characteristics, (34) 175.
 - laying—*see also* Egg production.
 - cottonseed meal for, (39) 480.
 - feeding experiments, (39) 74, 176, 275, 376, 377, 577, 780; (40) 76, 670, 773.
 - loss of pigment, (40) 671.
 - method for determining, (40) 571.
 - nesting habits, (40) 77.
 - range v. confinement for, (39) 275, 277, 376, 480.
 - records of different breeds, (29) 276; (30) 675.
 - selection, (38) 775; (39) 74, 268, 480, 675.
 - vegetable v. animal feeds for, (39) 176.
 - yellow color as basis for culling, (39) 378.
 - Leghorn, broodiness in, (29) 275.
 - Leghorn, remarkable record of, (28) 270.
 - molting, care, (33) 693.
 - new high egg record, (26) 669.
 - range v. confinement for, (34) 669; (35) 171, 377.
 - restricted rations for, (36) 72.
 - selection, (30) 270, 471; (37) 599.
 - selection for production, (33) 173; (37) 573, 871.
 - serum proteins of, (32) 861.
 - sitting, carbon dioxide under, (31) 172.
 - sitting, selection and care, (39) 781.
 - synthesis of lecithin in, (28) 269.
 - v. pullets for egg production, (38) 677.
 - wheat in ration, effects, (39) 74.
 - winter egg production in, (34) 470.
 - winter rations, (36) 373.
- Hepatic cirrhosis in cattle, cause, (27) 79.
- Hepatitis—
 - and nephritis of the hen, (39) 190.
 - in pigs, (33) 774.
- Hepialus—
 - humuli, notes, (30) 249.
 - hyperboreus, notes, (27) 452.
 - thule, hymenopterous parasite of, (27) 452.
- Heptadecylic acid, studies, (30) 110.
- Heptamerocera lonchaeae n.sp., description, (28) 162.
- Heptane—
 - sterilization of soils by, (32) 816.
 - use, (31) 744.
- Heptasmicra brasiliensis n.sp., description, (39) 566.
- Herbaceous—
 - borders, treatise, (29) 840.
 - perennials, rest period in, (33) 223.
- Herbicides, preparation and use, (31) 635.
- Herbs—
 - assimilation and chlorophyll content of leaves, (28) 728.

Herbs—Continued.

- culinary, handbook, (28) 259.
 - culture, (26) 393.
 - culture experiments, (26) 237.
 - culture in California, (26) 47.
 - drying, (38) 114.
 - growing and collecting, (36) 743.
 - of Southern Circle of Central Provinces, (32) 144.
 - phloem and bark diseases of, (34) 442.
 - treatise, (26) 239.
- Herd book, origin and use, (27) 672.
- Hereditary—
- infection in cattle ticks (30) 460.
 - material in germ cells, (32) 697.
- Heredity—
- alternative, significance, (29) 67.
 - ancestral law of, (26) 878.
 - and development, treatise, (30) 564.
 - eugenics, treatise, (28) 271.
 - mutation as cell phenomena, (34) 823.
 - sex, manual, (30) 767.
 - vigor, treatise, (35) 371.
 - behavior of unit-like series in, (28) 570, 571.
 - bibliography, (26) 470; (27) 175; (28) 370; (32) 860; (33) 168, 537; (34) 370.
 - calculating possibilities in, (28) 571.
 - carriers of, (29) 67.
 - chromosome theory, (34) 527; (35) 272; (38) 625.
 - control, (26) 672.
 - correlation coefficient, (27) 175, 176.
 - correlation tables, (27) 870.
 - crossing-over in, (35) 866.
 - definition, (27) 869.
 - Delboeuf's law, (27) 175.
 - discontinuity in, (27) 369.
 - dynamic, theory of, (26) 169.
 - factorial hypothesis, (38) 65.
 - facts and principles, (39) 671.
 - germ plasm theory (27) 468.
 - in alcoholized fowls, (39) 177.
 - Amaranthus retroflexus*, (32) 726.
 - animal breeding, (29) 570.
 - apple hybrids, (27) 843.
 - apples, (28) 639.
 - barley, (30) 335; (40) 825, 826.
 - beans, (27) 636; (28) 331; (31) 224; (32) 130, 540; (35) 836; (36) 735, 826.
 - beans, velvet-Lyon, (33) 34; (34) 431.
 - bees, (29) 860.
 - beets, (29) 332, 832.
 - birds, (37) 772.
 - Bryonia dioica*, (35) 819.
 - cabbage hybrids, (29) 638.
 - Campanula carpatia*, (39) 123.
 - canaries, (30) 564.
 - cannas, (33) 644.
 - Capsicum annuum*, (35) 130.
 - carinations, (28) 438; (35) 240.
 - carrots and beets, (39) 734.
 - cattaloos, (31) 566.
 - cattle, (28) 467, 572; (30) 869; (37) 66; (40) 73, 367.
 - cattle, blue-gray, (36) 168.
 - cattle-zebu hybrid, (28) 68.
 - cereals, (30) 334.
 - chickens and ducks, (30) 773.
 - Cichorium intybus*, (40) 225, 427.
 - clover, (38) 434.
 - Coleus, (37) 27.
 - corn, (27) 533, 737; (28) 534, 634; (29) 34, 333; (31) 331; (32) 536; (34) 431; (39) 825; (40) 436, 826.
 - corn and pepper, (34) 144.
 - corn leaves, (28) 231.
 - cotton, (27) 837; (28) 634; (30) 337; (33) 132, 834; (34) 227.
 - Datura*, (37) 546.
 - different parts of plants, (36) 27.
 - dogs, (29) 770.
 - domestic animals, (29) 665.
 - ducks and pheasants, (32) 869.
 - fowls, (32) 172, 767; (34) 177; (35) 867; (39) 781.
 - fruits, (32) 834.
 - garden peas, (28) 331; (30) 739.
 - garden plants, (32) 538; (34) 146.
 - garlic, (30) 738; (32) 834.
 - goats, (27) 874.
 - grapes, (33) 641; (34) 234.

Heredity—Continued.

- in guinea pigs, (27) 573; (34) 464; (35) 77.
 - guinea pigs and rats, (39) 877.
 - honeybees, (33) 159.
 - Hordeum distichum mutans*, (29) 7.
 - horses, (32) 767.
 - horses, treatise, (30) 269.
 - Japanese flowers, (33) 242.
 - man, (27) 70; (29) 769.
 - melons, (32) 140.
 - Mercurialis annua*, (36) 522.
 - mice, (28) 531.
 - microorganisms, (30) 329.
 - morning-glories, (38) 750.
 - Nicotiana, (29) 216, 321; (30) 826; (36) 629.
 - Nicotiana hybrids, (28) 530.
 - nitrate ferment, (33) 726.
 - oats, (31) 434; (37) 738; (40) 239, 438, 528, 629.
 - oats and wheat, (29) 532.
 - Oenothera* (32) 628; (33) 630; (34) 732; (37) 724; (39) 825; (40) 132.
 - Orthoptera, (31) 58, 272; (40) 367.
 - Oxalis, (34) 823.
 - peas, (38) 226; (40) 147, 225.
 - pepper, (28) 539; (32) 536.
 - pheasant hybrids, (30) 266.
 - pheasants, (28) 578; (30) 564.
 - pigeons, (26) 272; (28) 270; (33) 371; (40) 275.
 - pigs, (38) 675.
 - plant hybrids, (29) 320.
 - plants, (27) 733, 740; (28) 739, 740; (30) 328, 329, 330, 331, 342, 343, 432, 732; (36) 331, 521, 838; (39) 746, 747.
 - plants grown in salt water, (36) 27.
 - plants, relation to dimorphic leaves, (26) 128.
 - plants, studies, (34) 822.
 - plants, treatise, (26) 325.
 - pomace fly, (32) 555.
 - potatoes, (27) 500; (28) 632; (30) 338; (33) 233.
 - poultry, (30) 71, 374; (32) 571, 671; (37) 772; (40) 177.
 - Primula* and *Pisum*, (38) 822.
 - Primula kewensis* and its allies, (35) 818.
 - Primula sinensis*, (36) 629.
 - Prunus* hybrids, (28) 540.
 - rabbits, (34) 370, 466, 864.
 - red clover, (31) 330.
 - rice (33) 234; (40) 631, 632.
 - Rotundifolia* grapes, (31) 637; (35) 36.
 - sheep, (28) 570; (29) 771; (34) 864.
 - soy beans, (39) 331.
 - stocks, (26) 433.
 - sugar beets, (30) 834; (35) 641.
 - sugar cane, (33) 136; (40) 241.
 - sunflowers, (32) 831; (37) 543.
 - sweet corn, (29) 35.
 - timothy, (35) 232.
 - tobacco, (27) 239, 535; (29) 536; (30) 29, 530; (38) 238.
 - tobacco blossom color, (40) 442.
 - tomato hybrids, (39) 140.
 - tomatoes, (27) 742; (28) 539; (32) 537; (34) 42, 146; (35) 141, 235.
 - turnips, (31) 43.
 - velvet-Lyon bean hybrids, (31) 734.
 - wheat, (28) 638; (30) 341; (31) 234, 531; (33) 533; (34) 631; (35) 233; (36) 738; (40) 140, 525, 636, 830.
 - white mice, (34) 370.
 - yellow daisy, (32) 726; (36) 522.
 - Zea hybrids, (37) 536.
- influence of assortative mating in, (27) 466.
- influence of selection in, (27) 175, 369, 466.
- isolation and selection in, (30) 670.
- linkage in, (36) 729.
- manual, (38) 367.
- meaning of "factor" in, (37) 526.
- mechanical theory, (39) 574.
- Mendelian—
- and other interpretations of, (28) 271.
 - dominance in, (27) 275.
 - factor differences v. reaction system contrasts, (37) 433.
 - graphic representation, (33) 822.
 - mechanism of, (33) 869.
 - studies, (27) 370; (40) 524.
- Mendel's law, (27) 467.
- milk production factors in, (40) 672.
- mosaic, notes, (30) 328.
- mutation theory, (27) 528.

Heredity—Continued.

notes, (26) 365; (27) 175, 671, 769; (28) 765.
of acquired characters, (26) 365, 878; (28) 768, 877.
acquired characters, treatise, (26) 365.
albinism in cereals, (31) 329.
albinism in corn, (33) 131.
alterations in corn, (34) 31.
anthocyan pigment in rice, (38) 26.
aroma in hops, (39) 234.
aural abnormality in Ayrshire cattle, (33) 873.
awn color in wheat, (33) 836.
awns in oats, (39) 234.
blastogenic and somatogenic characters, (28) 531.
blood reactions, (29) 167.
blood-vessel breaking in horses, (30) 673.
blossom color in beans, (30) 142.
blossom-end rot in tomatoes, (35) 742.
bract teeth in cotton, (38) 532.
bristles in greenbottle fly, (31) 551.
characters in groundsel, (29) 216.
chlorophyll content in cereals, (32) 220.
color, see Color inheritance.
composition in wheat, (29) 835.
crossability in plants, (37) 432.
defects in horses, (34) 576.
disease resistance in grapes, (36) 537.
disease resistance in plants, (28) 147.
doublelessness in flowers, (29) 341; (30) 631; (34) 237; (39) 123.
earworm resistance in corn, (38) 445.
egg production in hens, (34) 74; (38) 876.
endosperm color in maize, (38) 226, 737.
epilepsy in guinea pigs, (35) 564.
fasciation in *Bunias orientalis*, (33) 727.
fat production in cows, (32) 369.
fecundity in fowls, (28) 576, 577; (33) 471.
fecundity in sheep, (30) 870.
fertility in mammals, (40) 662.
fertility in Southdown sheep, (38) 574.
fertility in swine, (34) 400.
flower size in *Nicotiana*, (34) 225.
flowering time in peas and rice, (35) 329.
fruit color in vegetables, (38) 443.
fungus diseases in plants, (27) 751.
germinability in blue grass seeds, (31) 834.
germinal peculiarities in plants, (40) 131.
glume characters in oats, (36) 834.
grain texture in wheat, (40) 143.
habit in beans, (34) 41.
heterostylism in *Primula acaulis*, (34) 226.
high laying qualities in fowls, (29) 472.
hoariness in plants, (28) 223.
horns in sheep, (27) 468; (28) 267.
imperfections in glutens, (27) 500.
leaf coloration in *Melandrium*, (32) 35.
mammary in pigs, (28) 570, 574; (29) 470; (33) 470; (38) 65.
milk fat percentage in cows, (31) 372.
milk production, (27) 375; (28) 878; (34) 671.
milking capacity in cows, (32) 174.
mutton points in sheep, (39) 477.
oil in cotton, (38) 533.
pathological conditions, "antedating" in, (28) 370.
pericarp color in corn, (38) 332, 531.
plant diseases, (31) 841.
plant hairs, (32) 426.
plumage characters in fowls, (29) 466.
poll character in cattle, (29) 68.
production capacity in plants, (33) 822.
quantitative characters, (30) 327.
racing performance in horses, (27) 875; (30) 674.
russet skin in pears, (28) 734.
seed characters in corn, (32) 726; (36) 521.
seed color in beans, (38) 539.
seed color in corn, (37) 737.
seed color in rye, (30) 339.
self-sterility in mignonette, (29) 136.
self-sterility in plants, (37) 820; (38) 823.
semisterility in plant hybrids, (32) 725.
sex, (27) 370; (34) 564.
sex in grapes, (39) 242.
sex in strawberries, (39) 349.
sex, studies, (29) 466.
short ears in sheep, (35) 772.
size, (32) 325; (40) 275.
size in poultry, (32) 399, 572.
size in rabbits, (32) 573.

Heredity—Continued.

of size in tobacco, (35) 819.
size in tomatoes, (33) 537; (35) 445.
somatic variation in corn ears, (31) 135.
sorrel color in horses, (36) 270.
spangling in poultry, (38) 275.
spotting in mice, (34) 466.
sterility in rye, (38) 236.
sugar and dry matter in mangels, (29) 270.
tillering in wheat, (37) 644.
tongue color in Jersey cattle, (31) 566.
tricolor in guinea pigs, (30) 265, 266.
triplet births in cattle and sheep, (34) 767.
tumor in *Drosophila*, (40) 860.
twinning in cattle, (32) 568; (40) 873.
twinning in mammals, (38) 574.
twinning in sheep, (34) 73; (39) 775.
variegation in Capsicum, (39) 123.
variegation in coffee, (33) 536.
variegation in Plantago, (38) 731.
waxy endosperm in corn, (30) 336; (32) 134.
wilt resistance in flax, (38) 449.
winter resistance in wheat, (29) 635.
wool character in caracul sheep, (38) 575.
wool character in sheep, (32) 99, 399.
wool production in sheep, (34) 74.
xenias in kidney beans, (31) 836.
origin of unit characters, (27) 369.
papers on, (28) 531.
pathological, (28) 162, 163.
physiology of, (36) 729.
presence and absence theory, (29) 466.
problem in immunity, (32) 78.
problems in, (27) 870.
pure line theory, (26) 272; (32) 325.
relation to evolution and animal breeding, treatise, (26) 161.
relation to mitochondria, (34) 629.
relative influence of sire and dam, (26) 166.
review of literature, (26) 272; (27) 368; (29) 466.
role of cross-fertilization and self-fertilization in, (34) 629.
role of nucleus and cytoplasm in, (29) 66.
sex-limited—
in animals, (30) 525.
in Ayrshire cattle, (35) 272.
in poultry, (26) 878; (27) 876.
notes, (27) 769.
sex-linked—
in doves, (28) 270.
fowls, (37) 771, 868.
poultry, (31) 368; (33) 271.
poultry and pigeons, (27) 573.
share of egg and sperm in, (39) 573.
significance of chromosomes in, (29) 321.
significance of osmotic membranes in, (28) 667.
somatic, notes, (28) 531.
studies, (26) 162, 878; (27) 30.
theory of factors, (29) 433.
treatise, (26) 272, 472; (28) 876; (29) 665; (31) 466.
types of reduplication, (28) 876.
unit character theory, (28) 768.
• use of terms "genotype" and "pure line," (26) 472.
Heringia dodecella, notes, (34) 855.
Heritiera minor, notes, (34) 240.
Hermannia affinis tenella, analyses and digestibility, (32) 167.
Hermobstaedia dammarensis, analyses and digestibility, (27) 871.
Hermetia—
illucens, distance of flight, (31) 352.
spp., notes, (28) 451.
Hermit thrush, coccidiosis in, (26) 187.
Hernandia seed, oil of, (37) 109.
Heron, Anthony green, destruction of locusts by, (28) 351.
Heronry at Walker Lake, (38) 556.
Hérons, destructive to mole crickets, (28) 751.
Hérons, distribution and migration, (29) 352.
Herpestes mungo as a pest in Trinidad, (31) 547.
Herpestomus hyponomeutae n.sp., description, (30) 60.
Herpetomonas—
culicis, studies, (29) 762.
donovani, notes, (28) 655.
ichneumonis, notes, (30) 857.
phlebotomi n.sp., description, (32) 60.
spp. in dog flea, (33) 862.

- Herpetomoniasis**—
induced development of, (33) 862.
induced, in birds, (35) 782.
relation to dog flea, (32) 61.
- Herpotrichia**—
nigra, new hosts for, (33) 550.
nigra, notes, (30) 152; (31) 845; (34) 56.
quinqueseptata n.s.p., description, (33) 351.
- Herring**—
fresh and pickled, food value, (38) 365.
guano, Russian, analyses, (28) 722.
kippered, examination, (27) 165.
meal, analyses and digestibility, (26) 567.
nutritive value, (40) 66.
roe, dried, organic bases in, (29) 863.
salts, notes, (30) 558.
- Herse convolvuli** (?), notes, (31) 550.
- Hessian fly**—
control, (35) 899; (39) 863.
discrimination between kinds and varieties of grain, (38) 863.
dispersion by wind, (37) 260.
immunity of wheat to, (33) 759.
in Kansas, (37) 260, 564.
in Ohio, (39) 863.
larvae, migration, (39) 561.
life history and remedies, (38) 54.
notes, (28) 62; (29) 252, 353, 793; (30) 656; (31) 57, 155, 455, 790, 851; (32) 756; (33) 155, 357, 455; (38) 466, 653; (39) 265, 561, 866; (40) 352.
parasites of, (30) 661; (33) 466; (39) 265.
remedies, (38) 653.
studies, (30) 157; (34) 250; (37) 760.
- Heterakinae** in Brazil, (30) 857.
- Heterakis**—
columbae, embryology, (30) 555.
isolonche, notes, (26) 684.
papillosa, earthworm vector, (38) 83.
perspicillum, transmission, (30) 486; (36) 183.
spp., physiological investigations, (31) 679.
- Heteramphus** n.s.p., notes, (30) 856.
- Heterobelyta chilensis** n.g. and n.s.p., description, (37) 460.
- Heterococcus** n.g. and n.spp., descriptions, (40) 262.
- Heterocordylus malinus**, *see* *Lygidea mendax*.
- Apple red bug**, *and* *Red bug*.
- Heterodera**—
radicicola—
anatomy and life history, (32) 341.
culture, (32) 49.
description and treatment, (30) 50.
injurious to coffee, (32) 646.
injurious to potatoes, (26) 748.
life history, (32) 900.
new hosts of, (34) 349.
notes, (26) 649, 844; (28) 648, 654; (29) 549; (30) 448, 746; (32) 651; (34) 841; (36) 52, 150.
on Canada thistle, (31) 642.
coffee, (34) 55.
cotton, (32) 342.
melons and cucumbers, (31) 52.
peonies, (33) 56.
potatoes, (33) 845; (40) 847.
sugar cane, (40) 157.
sweet peas, (32) 446; (37) 155.
studies, (26) 343.
treatment, (32) 843; (38) 555.
- schachtii**—
biology and treatment, (28) 547.
in California, (34) 458.
notes, (28) 149.
rearing on agar, (33) 547.
review of investigations, (28) 446.
studies, (27) 352; (28) 346, 545; (35) 151.
treatment, (26) 648; (33) 851; (36) 450.
sp. on peas, (40) 845.
spp., notes and treatment, (27) 354.
spp. on potatoes, (37) 157.
spp., parasitism, (30) 647.
- Heterolysins**, studies, (40) 578.
- Heteromicta latro** affecting bananas, (31) 253.
- Heteronychus mashunus**, life history and control, (39) 565.
- Heteronyx piceus** injurious to alfalfa, (35) 363.
- Heteropezinae**, studies, (30) 657.
- Heterophyes heterophyes**, transmission by flies, (38) 563.
- Heteroptera**—
from west coast of South America, (37) 357.
palearctic, catalogue, (30) 455.
- Heteroscapus ronnai** n.g. and n.s.p., description, (39) 566.
- Heterosis**—
bearing on double fertilization, (40) 226.
explanation, (38) 367.
Mendelian interpretation, (40) 323.
- Heterospiulus prosopidis**, notes, (29) 253.
- Heterosporium**—
betae n.s.p., notes, (29) 647.
echinulatum, parasitism, (29) 647.
gracile, studies, (34) 354.
variable, investigations, (26) 548.
variable, notes, (26) 55.
variable, treatment, (28) 446.
- Heterothrips**—
new species, description, (35) 853.
sericatus n.s.p., description, (30) 658.
- Heterozygosis**—
in evolution and plant breeding, (29) 31.
studies, (27) 428.
- Hevea**—
brasiliensis, *see* Rubber.
canker, notes, (32) 242.
spp., tapping experiments, (26) 443.
- Hevi**, asexual propagation, (32) 142.
- Hexagona** spp., on forest trees, (40) 349.
- Hexamethylenamin**, determination, (35) 616.
- Hexamethylenetetramin**, assimilation by plants, (26) 32.
- Hexane**—
effect on soil microorganisms, (31) 27.
sterilization of soils by, (32) 816.
- Hexaplasta**, n.spp., descriptions, (33) 360.
- Hexham** scent weed, description, (36) 639.
- Hexolic acid** in butter, constitution, (29) 508.
- Hexotrioses**, decomposition, (26) 310.
- Hibernation**, theories, (37) 156.
- Hibiscus**—
breeding experiments, (27) 741; (29) 235; (32) 742; (34) 146; (36) 839.
cannabinus, culture and improvement, (28) 633.
cannabis, production in Africa, (40) 238.
culture in Burma, (29) 736.
insects affecting, (30) 445.
moscheutos, insects affecting, (40) 754.
oculiroseus, dwarf sport, (34) 335.
ornamental, in Hawaii, (30) 445, 839.
propagation, (27) 143.
sabbdariffa—
analyses, (31) 366.
culture and use, (27) 40.
description and analysis, (29) 161.
n.vars., descriptions, (31) 535.
spp., notes, (27) 431.
spp., root system, (39) 230.
syriacus, food plant of cotton boll weevil, (31) 458.
syriacus, supernumerary carpels in, (28) 832.
- Hickories**—
dying, cause and remedies, (26) 560.
grafting, inarch method, (31) 443.
parthenogenesis in, (30) 544; (31) 443.
shagbark, grafting, (31) 443.
top-working with pecans, (35) 745.
- Hickory**—
aphis, little—
on pecan, (38) 157.
studies, (31) 753.
as a pollinizer for pecans, (36) 344.
bark beetle—
notes, (27) 755; (30) 655; (32) 550; (34) 158.
remedies, (26) 560; (35) 760; (36) 856.
bark borer—
notes, (26) 856; (28) 158; (30) 656; (33) 58, 252.
remedies, (29) 457.
borers, notes, (40) 259.
cossid on pecan, (38) 157.
destructive distillation, (27) 745.
distillation value, (32) 48.
gall aphid, notes, (37) 255.
grass, notes, (29) 441.
leaf galls, descriptions, (35) 468.
leaf stem gall louse, notes, (33) 58.
manufacture and utilization, (26) 544.
mealy bug, description, (36) 551.
nut oil, digestibility, (38) 868.
nut oil, notes, (30) 165.
nuts, analyses and food value, (30) 165.
nuts, distribution of nitrogen in, (36) 269.
phylloxera on pecan, (38) 157.

- Hickory**—Continued.
 seeds, storage experiments, (37) 547.
 shagbark, bearing dates, (33) 643.
 shagbark, wood structure, (36) 447.
 tiger-moth injurious to orchards, (38) 464.
 top-working with pecans, (34) 151.
 tussock moth, notes, (39) 761.
 twig girdler on pecan, (38) 157.
- Hides**—*see also* Skins.
 and skins, book, (27) 775.
 and skins, world's supply, (39) 477.
 anthrax infection from (26) 781.
 cattle, supply of, (32) 91.
 curing and marketing, (27) 470.
 disinfection, (31) 677; (33) 178; (34) 781; (38) 784.
 exports from Mexico, (27) 70.
 from China, disinfection, (35) 487.
 prices in India, (30) 896.
 subcutaneous matter of, composition and feeding value, (35) 376.
- Hieracium**—
 hybrids, artificial fertilization, (28) 531.
 spp., notes, (32) 436.
- Hierochloa borealis**, geographical distribution, (26) 334.
- Hieroglyphus rusticus**, candicans in North Dakota, (40) 161.
- Hieroglyphus banian**—
 control, (23) 249.
 studies, (27) 55.
- High school**—*see also* Schools.
 visitors in Texas, (30) 199.
- High schools**, rural relations, (39) 298; (40) 486.
- Highway**—
 bridges and structures, paper on, (34) 484.
 cost keeping, (39) 794.
 engineering—
 chemistry of, (26) 789.
 economics of, (35) 389.
 traffic laws in relation to, (40) 387.
 treatise, (27) 189; (34) 585.
 engineers, feet-miles conversion table for, (35) 390.
 statistics and data, uniformity in, (34) 484.
 transportation, economic, (40) 387.
 work, equipment for, (34) 484.
- Highways**, *see* Roads.
- Hilaria**—
 cenchroides, seedling on ranges, (30) 35.
 mutica as hay or silage crop, (38) 471.
- Hilgard, E. W.**—
 biographical sketch, (34) 301.
 memorial addresses, (35) 595.
- Hilipus bonelli**, notes, (28) 858.
- Hill bull blood**, analyses, (36) 779.
- Himantia stellifera**—
 notes, (40) 157, 848.
 studies, (38) 851.
- Hinoki**—
 fertilizer experiments, (38) 624.
 wood, essential oil of, (34) 802.
- Hippeastrum**, red leaf spot of, (36) 453.
- Hippobosca maculata**, relation to surra, (31) 777.
- Hippodamia**—
 ambigua, notes, (28) 161.
 convergens—
 collecting, (27) 361.
 destruction by white fungus, (26) 454.
 destructive to citrus plant lice, (26) 755.
 fumigation, (39) 463.
 life history and habits, (34) 555.
 notes, (28) 250; (29) 652; (32) 654.
 studies, (29) 355.
 spp., life history, (33) 562.
 spp., notes, (27) 561.
 spp., studies, (39) 663.
- Hippopotamus liberiensis**, domestication, (30) 672.
- Hippotion celerio** in South Africa, (40) 648.
- Hippuric acid**—
 assimilation by plants, (26) 32.
 cleavage by mold fungi, (30) 503.
 decomposition by mold fungi, (29) 28.
 determination, (31) 610; (40) 611.
 effect on development of radishes, (26) 229.
 effect on spectroscopic test for hemoglobin, (26) 114.
 excretion as affected by spices, (28) 261.
 formation in pigs, (32) 262.
- Hirayamaia n.g.** and *n.sp.*, description, (38) 857.
- Hirneola auricula-judae**, studies, (33) 551, 552.
- Hirudo boynntoni**, transmission of rinderpest by, (33) 876.
- Hispinae**, catalogue, (26) 560.
- Histidin**—
 betain in *Boletus edulis*, (31) 203.
 detection, (32) 20.
 determination, (31) 212.
 determination in proteins, (26) 22.
 effect of guinea pig serum on, (30) 478.
 effect on plant growth, (28) 324.
 in grape leaves, (27) 731.
 hops, (32) 502.
 malt sprouts, (26) 24.
 soils, (27) 500.
 notes, (28) 29.
 nutritive value, (38) 569.
 preparation, (38) 708.
 rôle in purin metabolism, (37) 265.
- Histology**—
 pathologic, treatise, (36) 674.
 textbook, (29) 676.
 treatise, (26) 876.
- Hitches**, directions and illustrations, (27) 96.
- Hodotermes turkestanicus**, remedies, (31) 155.
- Hoing machines** for vineyards, tests, (28) 187.
- Hog-breeding crate**, (39) 577.
- Hog bristles**, fertilizing value, (29) 129.
- Hog cholera**—
 agglutination reactions in, (26) 785; (27) 289, 384.
 and infectious abortion in pigs, (31) 886.
 attenuated form, (26) 483.
 auto-infection in, (34) 279.
 bacillary, notes, (31) 679.
 bacilli in intestines of healthy hogs, (26) 184.
 bacillus, nongas-producing strain, (36) 582.
 bacillus, virulence after passage through rabbits, (33) 382.
 blood, attenuation, (36) 777.
 blood filtrates, (36) 776.
 cases, paratyphoid bacilli from, (40) 480.
 cause, (26) 785; (27) 290; (28) 82; (37) 382, 782.
 cell inclusions in, (34) 679.
 complement fixation in (34) 582; (39) 392.
 control, (28) 184, 285; (29) 500, 888; (36) 192; (38) 183, 888; (39) 387, 582; (40) 89, 577.
 control, importance, (39) 492.
 control in—
 California, (30) 484.
 Canada, (31) 886.
 Colorado, (31) 885.
 Germany, (33) 87, 680; (34) 185.
 Great Britain, (36) 676; (37) 779.
 Indiana, (31) 781; (32) 676; (36) 482; (37) 882.
 Iowa, (34) 387; (36) 777; (38) 78.
 Kansas, (35) 488.
 Kentucky, (32) 83.
 Michigan, (37) 274.
 Minnesota, (32) 880; (34) 188.
 New York, (32) 783.
 North America, (33) 87.
 Ohio, (31) 885.
 Oregon, (37) 374.
 Pennsylvania, (35) 885; (37) 577.
 Tennessee, (34) 777.
 United States, (34) 185, 273, 280.
 cures and preventives, tests, (32) 880.
 cures and so-called specifics, (34) 82.
 determination and control, (39) 188.
 determining in the herd, (40) 888.
 diagnosis, (31) 878; (34) 777.
 diagnosis and treatment, (39) 891.
 differential diagnosis, (33) 285.
 diseases resembling, differential diagnosis, (39) 589.
 dissemination, (30) 285; (34) 275.
 filterable organism in, (34) 680.
 following vaccination against erysipelas, (31) 183; (32) 682.
 globulin, tests, (39) 492.
 globulin, use, (35) 884.
 immunity of suckling pigs to, (37) 881; (39) 790.
 immunization, (26) 289, 383, 578, 888; (27) 77, 290, 482, 683, 786, 887; (28) 82, 285, 587, 682; (29) 482, 682; (30) 83, 586; (31) 36, 577, 680, 885; (32) 83, 184, 378, 480, 783; (33) 483, 582, 879; (34) 184, 575; (35) 884; (36) 84, 482, 777, 868, 884; (37) 779; (38) 281, 287, 589, 684, 689, 888; (39) 790; (40) 290, 683.

Hog cholera—Continued.

- in Argentina, (38) 787.
- Cuba, (35) 282.
- England, (32) 271.
- Germany, (34) 575.
- Great Britain, (31) 177; (34) 382; (36) 378.
- Hawaii, (37) 374.
- Imperial Valley, (34) 274.
- Ireland, (27) 781.
- Peru, (36) 779.
- Portugal, (36) 280.
- Prussia, (27) 181.
- southern Italy, (36) 680.
- United States, (31) 381; (37) 274.
- larynx and kidney hemorrhages in, (36) 83.
- nature and treatment, (29) 384; (31) 484.
- nomenclature suggested for, (33) 182, 285.
- nostrums, notes, (31) 657, 658.
- notes, (26) 587; (27) 475, 683; (29) 888, 889, 896; (31) 79, 86, 483, 585, 682; (32) 271, 278, 479, 480, 584, 783; (33) 86; (34) 188; (35) 78, 282; (37) 477, 784; (38) 178, 179, 576, 888; (40) 86, 676, 778, 880.
- outbreak at Algiers, (29) 482.
- outbreak in Manitoba, (28) 587.
- outbreaks in England, (38) 282.
- papers on, (33) 176.
- prevention, (26) 289; (29) 82; (31) 886; (33) 182, 483; (34) 680; (37) 882.
- prevention and control, (32) 184.
- prevention and treatment, (38) 82.
- relation to—
 - Bacillus völdagsen*, (29) 482.
 - human typhoid, (26) 881.
 - necrobacillosis, (39) 589, 590.
 - parasites, (34) 280.
 - rats, (40) 480.
 - spirochetes of digestive tract, (37) 279.
 - swine plague, (26) 383.
- remedies, tests, (34) 783.
- researches, (27) 77.
- review of investigations, (32) 83; (34) 386; (38) 381.
- secondary invaders, (34) 479.
- septic endometritis and abortion in, (30) 484.
- septicemic form, (30) 685.
- serum—
 - agglutinins in for *Bacillus suispestifer*, (36) 280.
 - as affected by freezing, (38) 487.
 - as affected by heat, (34) 783.
 - distribution, (28) 476.
 - filtration, (37) 881.
 - guaranties of preparation and distribution, (39) 680.
 - immune bodies of, (34) 777.
 - paper on, (27) 576.
 - preparation in Hungary, (27) 186.
 - production, (26) 785; (27) 289, 384, 683; (28) 476; (34) 185, 273; (35) 488; (36) 179, 280.
 - production in Illinois, (36) 384.
 - production, virulent salt solution in, (34) 680.
 - refinement, (34) 387.
 - relation to foot-and-mouth disease outbreak, (35) 74.
 - separation of active principle, (37) 78.
 - separation of antibody fractions, (34) 479.
 - standardization, (34) 280.
 - storing, (36) 482.
 - studies, (36) 884; (39) 183.
 - use, (27) 683.
 - vacuum method of drawing, (34) 386.
- spirochetes in, (30) 585.
- studies, (26) 183, 194, 881; (27) 583, 887; (28) 183, 381, 482; (30) 388, 585, 685; (31) 86, 87, 680; (32) 83, 378, 582, 782; (33) 182, 279, 285, 580, 676, 879; (34) 82; (35) 78, 784, 878; (36) 384, 675, 680; (38) 688; (39) 81; (40) 783, 784.
- symptoms, (33) 878.
- transmission, (36) 675; (37) 691; (38) 381; (39) 290.
- treatise, (32) 277.
- treatment, (27) 77, (33) 86, 389, 483, 878.
- vaccine—
 - preparation, (33) 86.
 - production, (28) 681.
 - use, (30) 180.
- virulence of blood in, (37) 784.
- virus—
 - action of Kreso on, (34) 583.
 - attenuation, (33) 86; (36) 84; (39) 391, 392.

Hog cholera—Continued.

- virus—continued.
 - culture experiments, (30) 384.
 - effect on laboratory animals, (40) 480.
 - fixed, (34) 184.
 - fixed, preparation, (29) 287.
 - organ extracts for, (39) 684.
 - studies, (28) 587, 681.
- Hog erysipelas—
 - and swine plague, relation, (31) 483.
 - diagnosis, (27) 786; (28) 381, 477; (29) 179, 888; (30) 685; (31) 183, 878.
 - immune serum, investigations, (27) 683.
 - immunization, (26) 185, 578, 587, 676; (32) 375; (33) 285.
 - infection in man, (29) 780.
 - notes, (26) 373.
 - studies, (26) 184.
- Hog louse, *see* *Haematopinus suis*.
- Hog motor, tests, (27) 874.
- Hogs, *see* Pigs.
- Hohenheim Institute for Plant Protection, report, (29) 845.
- Holanusomyia pulchripennis* n.g. and n.sp., description, (34) 857.
- Holaspis* n.sp., parasitism, (27) 553.
- Holencyrtus*—
 - calypso* n.sp., description, (31) 459.
 - physokermis* n.sp., description, (36) 555.
- Holcocera iceryaeella*, notes, (36) 56.
- Holcoeneme coeruleocarpa*, notes, (36) 355.
- Holeus lanatus*—
 - dissemination by insects, (27) 47.
 - germination experiments, (31) 227.
 - notes, (30) 434.
- Holden, Whittaker, biographical notes, (29) 121.
- Holly—
 - mountain, pith-ray flecks in, (30) 855.
 - torrix moth, studies, (40) 167, 356.
- Hollyhock—
 - inheritance of doubleness, (39) 123.
 - rust in Sweden, (33) 846.
 - rust, notes, (26) 52; (32) 48.
 - rust, studies, (26) 650; (30) 652.
 - rust, treatment, (26) 750; (27) 132, 746; (31) 245.
- Hololepta quadridentata*, notes, (39) 58.
- Holotrichia vidua*, notes, (26) 857.
- Holy grass, geographical distribution, (26) 334.
- Homalomma pteionideae* n.sp., description, (34) 456.
- Homalommyia*, *see* *Fannia*.
- Home—
 - betterment movement in United States, (33) 397.
 - conveniences, notes, (31) 388.
 - conveniences, paper on, (29) 465.
 - demonstration work, effect of, (37) 598.
 - economics—*see also* Vocational education and Household.
 - activities of U. S. Department of Agriculture, (31) 359.
 - application, (36) 194.
 - association in Alabama, (37) 895.
 - at Cornell University, (29) 898.
 - bacteriological exhibits, (30) 395.
 - bibliography, (28) 492; (29) 93, 567, 792.
 - clubs in high schools, (33) 94.
 - clubs in Pennsylvania, (31) 393.
 - clubs, notes, (32) 597.
 - clubs, programs for (32) 495.
 - contests for boys and girls, (28) 194.
 - contests in, (29) 299.
 - course for southern schools, (37) 894.
 - course for Texas homemakers, (40) 197.
 - courses, (27) 96, 298; (28) 795; (30) 395; (33) 895; (38) 94, 497, 597.
 - courses, elementary and secondary, (39) 299.
 - courses for high schools, (31) 692; (32) 394.
 - courses for teachers, (36) 96.
 - demonstration lectures in, (30) 94.
 - demonstration work in Louisiana schools, (38) 196.
 - digest of data, (26) 659.
 - economics, education—
 - in United States, (26) 794.
 - relation to social hygiene, (38) 394.
 - vocational, in United States, (36) 701.
 - economics, equipment for teaching, (36) 396.
 - economics, evening classes in, (32) 596.

Home—Continued.

- economics extension, work—
 - and expenditures, (38) 899.
 - in Canada, (32) 92.
 - Illinois, (32) 691.
 - Kansas, (32) 690.
 - Minnesota, (32) 691.
 - New Jersey, (34) 197.
 - Southern States, (36) 896.
 - United States, (33) 94, 101; (36) 795.
 - Utah, (33) 94.
- school credit for, (36) 293.
- economics—
 - field of, (31) 694.
 - handbook, (26) 394, 597; (28) 461; (31) 760; (40) 361.
 - helps for teachers in, (28) 693.
 - high school lessons in, (29) 792.
 - in education for women, (36) 96.
 - in extension work, (32) 10.
- economics instruction—
 - cultural value, (34) 897.
 - for young girls, (29) 695.
 - home projects in, (35) 594.
 - in agricultural colleges, (32) 690.
 - Alaska, (32) 492.
 - Belgium, (27) 694; (29) 92.
 - California, (37) 394.
 - Canada, (28) 490; (33) 897; (36) 793; (37) 699; (38) 299.
 - colored schools of Kentucky, (30) 298.
 - Cornell University, (32) 895.
 - Denmark, (31) 599.
 - Detroit schools, (38) 599.
 - elementary schools, (33) 696; (34) 395; (36) 598; (38) 897.
 - England, (31) 261.
 - Europe, (30) 694.
 - foreign countries, (31) 97.
 - France, (31) 493, 899; (34) 899.
 - Georgia, (33) 296.
 - German Switzerland, (37) 793.
 - Germany, (26) 794.
 - Harlem (Ill.) consolidated schools, (31) 597.
 - high schools, (26) 394; (31) 394; (32) 494; (34) 395; (35) 898; (36) 594; (39) 92.
 - Indiana, (33) 595; (34) 395.
 - Iowa schools, (35) 592.
 - Ireland, (30) 298.
 - Louisiana, (31) 193; (33) 792.
 - Massachusetts, (38) 396.
 - Minnesota high schools, (31) 297.
 - Missouri high schools, (32) 499.
 - Netherlands, (32) 92.
 - New Hampshire, (33) 397; (37) 699.
 - New Jersey, (40) 295.
 - New Mexico, (29) 92; (32) 690; (34) 793.
 - 1917, (40) 794.
 - North Dakota, (37) 193.
 - Ontario, (34) 897.
 - Philippines, (35) 92; (38) 300.
 - Pommernania, (30) 793.
 - Porto Rico, (30) 199.
 - public schools, (32) 897; (37) 93, 494.
 - rural schools, (28) 694; (38) 697.
 - San Francisco, (40) 294.
 - Saskatchewan, (36) 291.
 - Saxony, (33) 296.
 - 7th and 8th grades, (32) 692.
 - Silesia, (35) 395.
 - State colleges, (32) 491.
 - Sweden, (35) 395.
 - Texas, (40) 598.
 - United States, (33) 397; (35) 394, 499; (36) 897; (37) 393.
 - universities and colleges, (38) 394.
 - University of Illinois, (32) 288.
 - University of Minnesota, (26) 794.
 - Utah, (37) 198.
 - village and rural schools, (32) 495.
 - West Virginia, (29) 92.
 - Wisconsin, (33) 94.

papers on, (35) 897; (37) 192, 596; (40) 894.
 principles and policies, (34) 897.

economics—

- laboratory manual, (28) 393.
- lectures on, (32) 394.
- lessons for rural schools, (39) 498

52831—26†—20

Home—Continued.

economics—continued.

- lessons in, (28) 693; (33) 495; (35) 594; (36) 496, 497; (40) 197, 198.
- manual, (30) 763.
- manual and course of study, (40) 396.
- need for research in, (27) 1.
- notes, (30) 462, 898; (31) 494.
- outline for study of, (33) 297, 695, 697, 792.
- papers on, (29) 362; (31) 393.
- reading courses in, (31) 394; (32) 795.
- recipes, (28) 693.
- relation to farmers' institutes, (32) 98
- economics schools—
 - in Denmark, (32) 493.
 - in France, (27) 94; (30) 495.
 - in Pennsylvania, (32) 596.
 - itinerant, notes, (27) 597.
 - notes, (31) 692.
- economics—
 - short courses in Canada, (35) 695.
 - sources of information on, (30) 560.
 - study classes, organizing, (32) 488, 597.
 - syllabus, (29) 496; (31) 495.
 - teachers, preparation, (39) 195, 595.
 - teachers, summer schools, (39) 798.
 - teachers, training in Prussia, (35) 695.
 - teaching, (31) 791.
 - teaching language through, (28) 91.
 - textbook, (28) 795; (31) 298; (32) 394; (33) 495, 598; (34) 293, 395, 599, 794; (36) 497; (37) 396, 894; (40) 296, 796, 899.
 - treatise, (28) 566; (29) 162, 266; (32) 65, 495; (40) 96.
 - work in Missouri, (31) 97.
 - work of States Relation Service, (38) 898.
- furnishing and decoration, outline, (34) 293.
- grounds—
 - arrangement, (34) 741.
 - beautifying, (28) 193; (40) 247.
 - improvement, (36) 446.
 - laying out, (34) 238.
 - planning and planting, (37) 44, 346; (39) 450; (40) 447.
 - planting, (30) 196, 395.
- industries in Scotland, (33) 190.
- management school in Austria, (26) 689.
- project in agricultural education, (40) 295.
- projects for New Hampshire schools, (40) 296.
- work, winter, for canning club girls, (33) 298.
- Homemakers' clubs—
 - for negro girls, (33) 299.
 - organizing and operating, (32) 495.
- Homemaking schools in New York, (26) 192; (37) 394.
- Homes—
 - decoration and furnishing, (32) 597.
 - for laborers, (31) 293.
 - for rural laborers, (32) 687.
 - hygienic surroundings of, (31) 387.
 - labor-saving devices in, (28) 566.
- Homesteads in Alaska, (36) 791.
- Hominy—
 - ash analyses, (29) 861.
 - canning, (27) 508.
 - chop, analyses, (31) 467.
 - chop, energy value, (33) 72.
- feed—
 - analyses, (26) 72, 165, 362, 468, 568, 665; (27) 68, 170, 171, 469, 570, 670, 872; (28) 364, 464, 572, 669; (29) 367, 570, 769; (30) 68, 169, 565, 868; (31) 73, 168, 366, 467, 663, 863; (32) 169, 667; (33) 71, 371, 568, 665, 870; (34) 72, 169, 263, 371, 467, 566, 665; (35) 373, 374, 562, 867; (36) 167, 268, 765; (37) 268, 471, 767; (38) 67, 368, 369, 665; (39) 167, 370, 773; (40) 72, 571, 665.
 - composition and digestibility, (38) 68.
 - energy value, (38) 68.
 - feeding value, (40) 668.
 - for pigs, (27) 571.
 - v. corn for pigs, (31) 868.
- grits, analyses, (26) 165.
- hulling corn for, (34) 66.
- meal—
 - analyses, (26) 568, 665; (27) 774; (28) 265; (29) 270; (30) 67; (31) 366; (32) 259, 667; (34) 169, 263, 467, 566, 665; (35) 373, 366, 167, 667; (40) 470.

Hominy—Continued.

meal—continued.

and feed, analyses, (29) 666; (39) 270.

feeding value, (39) 778.

v. barley for pigs, (29) 671.

Homocidus spp., notes, (31) 62.

Homoeonychia rapae n.sp., description, (38) 767.

Homogentisinase, notes, (30) 709.

Homona coffearia, studies, (40) 453.

Homoptera—Auchenorrhyncha, paleartic, catalogus, (30) 455.

Homoptera—

of British India, (37) 54.

of Formosa, (38) 361.

of Hawaii, (38) 557.

Homotyposis in plants, (36) 628.

Hondroi beans, culture experiments, (32) 227.

Honduras experimental station, notes, (35) 597.

Honey—

acids of, (28) 166.

adulterated, detection, (26) 25; (31) 314.

analyses, (31) 18, 314, 315; (32) 161, 762.

analyses and food value, (37) 570.

and its use in the home, (32) 855.

Argentine, analyses, (40) 558.

artificial, composition and uses, (32) 760.

as food, (33) 753.

as source of vinegar, (36) 717.

bacteriological studies, (26) 505.

Belgian, examination, (32) 715.

bibliography, (27) 364.

biological analysis, (26) 312.

boric acid in, (27) 410.

chemistry of, (27) 613.

chemistry of, treatise, (29) 109.

chemistry, progress in 1911, (26) 805.

comb. production, (27) 865.

composition, (33) 753.

definition, (32) 762.

diastase activity of, (33) 502.

eater, new, from Marianne Islands, (37) 758.

examination, (26) 26, 505, 608, 867; (27) 410; (28)

357; (30) 206; (40) 14.

ferments of, (33) 502.

formation, chemistry of, (28) 166.

formic acid in, (27) 714.

gray, properties, (32) 560.

Grecian, analyses, (28) 862; (30) 258.

imported, composition, (27) 363.

imports and exports, (34) 454.

in antidiabetic diet, (35) 266.

inversion of saccharose by, (27) 813.

invertase and diastase in, (26) 710.

judging, (26) 608.

judging by diastase content, (33) 502.

marketing, (32) 853.

methods of analysis, (26) 207, 506; (28) 22, 510;

(31) 112; (32) 109; (38) 315.

mineral constituents, (33) 164.

notes (33) 299.

of Hungary, analyses, (33) 565.

plants—

of California, (26) 128.

of Guam, (31) 425.

of Iowa, (32) 853.

tests, (40) 65.

production—

in United States, (39) 565.

in United States, 1918 program, (38) 865.

relation to weather, (37) 854.

recipes, (40) 461.

removing from hollow trees, (35) 856.

Russian, identification, (28) 862.

statistics in United States, (28) 390.

strained, analyses, (32) 762.

studies, (26) 25; (31) 113.

Turkish, examination, (27) 268.

utilization, (35) 470.

vetch, notes, (29) 233.

vitamin content, (40) 564.

volatile acids in (26) 25; (27) 112.

wild, notes, (27) 865.

yields in 1916, (40) 759.

Honeybees, *see* Bees.

Honeydew, relation to sooty molds, (27) 848.

Honeysuckle—

French, insects affecting, (26) 147.

Tartarian, culture in Alaska, (29) 743.

Honge tree leaves and oil cake, fertilizing value, (38) 220.

Honohono as a feeding stuff, (35) 561.

Hood River basin, Oreg., hydrology, (32) 382.

Hoof meal, fertilizing value, (39) 814.

Hooker, C. W., biographical sketch, (28) 300.

Hookworm—

disease in sheep and other animals, (29) 287.

ova, destruction by low temperatures, (40) 685.

remedies, (37) 578.

Hop—

aphis—

alternate hosts, (39) 464.

notes, (36) 253.

on Rosaceae, (32) 848.

remedies, (28) 759; (32) 649.

studies, (29) 254.

flea beetle—

biology and remedies, (30) 255.

notes, (29) 761.

industry in Württemberg, history, (29) 141.

mildew, notes, (30) 348.

mildew, resistance to fungicides, (38) 450.

mildew, studies, (29) 346; (32) 843.

powdery mildew, notes, (29) 547.

redbug, life history and remedies, (38) 559.

sprouts as an early spring salad, (29) 161.

Hoplandrothrips affinis n.sp., notes, (34) 255.

Hoplia—

new, from Florida, (39) 664.

trifasciata, notes, (28) 158.

Hoplocampa—

brevis, notes, (31) 848.

cookei, life history and remedies, (28) 657.

cookei, notes, (30) 857.

Hoplogryon kansansensis n.sp., description, (27) 60.

Hoplophora monogramma, notes, (30) 854.

Hoplothrips corticis, notes, (34) 550.

Hops—

aroma of, (31) 201; (33) 530.

arsenic in, (38) 9.

as affected by refrigeration, (29) 13.

breeding for aroma, (39) 234.

chemical changes in during sulphuring, (32) 809.

coccinellids affecting, (33) 256.

composition, (31) 41, 311.

composition as affected by kiln drying, (30) 115.

culture and improvement, (28) 633.

culture and ripening, (29) 534.

determination of bitter constituents, (30) 209;

(33) 507.

fertilizer experiments, (27) 534; (29) 534; (30) 37,

527; (31) 527, 735, 736.

flowering time, (33) 530.

from different sources, composition, (31) 41.

growth measurements, (31) 527.

insects affecting, (26) 353; (28) 248; (30) 53; (34)

651.

Japanese, floral anomalies in, (26) 432; (27) 827.

Japanese, sex anomalies in, (29) 27.

judging, (29) 535.

lupulin content, (33) 530.

male, distribution to growers, (28) 636.

male, variation in, (33) 834.

marginal teeth of leaves from different clones,

(40) 527.

methods of analysis, (29) 535.

nitrogenous constituents, (32) 502.

pollination and fertilization, (31) 735; (33) 335.

production and use in United States, (27) 738.

production in United Kingdom, (26) 793.

red spider affecting, (29) 261; (32) 157.

relation of stand to yield, (28) 834.

resins of, (34) 502, 711.

resistance to mildew, (39) 147.

ripening studies, (28) 211.

rotational movement of stems, (31) 527.

seeded and seedless, characteristics, (31) 735.

sex studies, (31) 832.

soft resin content, (26) 209.

spent, as feeding stuff, (30) 565; (34) 263.

statistics, (26) 190.

sterile dwarfs in, (31) 130, 332.

stored, soft resins of, (33) 709.

varieties, (28) 636; (33) 433.

wild, of Denmark, (39) 234.

Horco-molle tree, oil from, (38) 714.

Hordein—

effect on wheat gluten, (26) 67.

lysin content, (31) 559.

of barley and gliadin of wheat, relationship, (31)

377.

- Hordenin**—
in germinating corn, (35) 202.
sulphate, nature and use, (26) 580.
- Hordeum**—
distichum nutans—
heredity in, (29) 738.
transmission of morphological characteristics in, (28) 531.
jubatum, geographical distribution, (26) 334.
murinum, geographical distribution, (26) 335.
Horismenus, n.spp., descriptions, (26) 352.
Horistonotus uhleri, see Corn wireworm.
Horistothrips australiae n.g. and n.spp., description, (31) 550.
Horizonetta, new genus, erection, (37) 758.
Hormiopterus graciliformis n.spp., description, (26) 352.
- Hormiscium colocasiae**—
n.spp., description, (28) 747.
notes, (29) 345.
- Hormodendron**—
hordel, notes, (26) 446.
sp., notes, (29) 647.
- Hormone media**, preparation and use, (39) 583.
- Hormones**, rôle in production of secondary sex characters, (31) 271.
- Horn**—
fertilizing value, (29) 129.
- fly**—
as affecting milk production, (40) 648.
as anthrax carrier, (39) 161.
mites infesting, (26) 252.
notes, (29) 454; (32) 555; (34) 753.
parasites of, (29) 53; (34) 59; (37) 847.
repellants for, (38) 358.
transmission of poliomyelitis by, (31) 551.
ground, fertilizing value, (37) 321.
meal, ammonification and nitrification under laboratory conditions, (30) 218.
meal, nitrification in soils, (31) 818.
- Hornbeam**, forcing experiments, (28) 435.
- Hornbill**, giant, peculiarity in growth of tail feathers, (34) 850.
- Hornblend decomposition** by soil bacteria and yeast, (31) 121.
- Hornet**, European—
girdling of hardwood twigs by, (37) 255.
notes, (28) 752; (34) 752.
poison of, (29) 57.
- Horns**—
breeding for, (33) 173.
inheritance in cattle, (29) 68.
inheritance in sheep, (27) 468; (28) 267.
- Horntails of North America**, (29) 359.
- Hornworms**, studies, (26) 453.
- Horonomia emarginata**, host plant of fruit fly, (26) 758.
- Horse**—
and mule as twins, (38) 574.
and zebra hybrids, skull characters, (38) 65.
bern, plans and specifications, (33) 783.
barns for prairie farms, (35) 690.
bean seeds, germinating, nitrogenous substances in, (32) 112.
beans—
changes in during ripening, (36) 731.
composition as affected by companion crop, (26) 617.
culture and use, (39) 837.
culture experiments, (31) 829.
culture for winter forage, (38) 735.
description, (30) 828.
distance experiments, (30) 732.
fertilizer experiments, (26) 631.
for pigs, (36) 371.
hybridization experiments, (32) 130.
inoculation experiments, (26) 617.
liming experiments, (32) 127.
notes, (28) 532.
sulphur as a fertilizer for, (30) 139.
varieties, (26) 631; (31) 230.
blood, red and white corpuscles in, (29) 783.
bots—see also *Gastrophilus* spp.
relation to pernicious anemia, (39) 81.
breaking in Argentina, (30) 71.
Carnot, notes, (34) 869.
control brands in Germany, (30) 373.
disease in Patagonia, (39) 85.
- Horse—Continued.**
diseases—
control during war, (38) 287.
handbook, (30) 285; (37) 778, 784; (39) 83, 492.
in British East Africa, (30) 576.
nature and treatment, (34) 576.
notes, (29) 676; (31) 380.
relation to phosphate depletion of soil, (38) 118.
report on, (36) 884.
treatise, (34) 278, 477, 794; (38) 781.
treatment, (28) 587.
distemper, immunization, (30) 83.
entrails, utilization, (30) 567.
fairs and exhibitions in United States, (28) 796.
flesh, analyses, (40) 656.
flesh as human food, (39), 668.
flesh, preservation and use, (27) 460.
flies, see *Tabanus striatus*.
hybrids, fertility of, (26) 163.
insurance societies in Holland, (30) 493.
labor, cost, (34) 558, (37) 867; (39) 495.
labor on the farm, (39) 794, 795.
lice, biology and remedies, (38) 184.
mange—
nature and treatment, (30) 485.
notes, (40) 89, 676.
parasitic, in horses, asses, and mules, (29) 588.
treatment, (38) 82; (39) 283, 291.
meat—
detection in bologna, (28) 615.
detection in canned beef, (34) 113.
detection in pork products, (28) 510.
protein as affected by alcohol, (30) 779.
nettle, destruction, (26) 333.
racing, plea for, (37) 771.
saliva—
amylolytic activity, (38) 180.
anthrax bacilli in, (30) 83.
diastatic action, (37) 771.
orokinase and ptyalin in, (40) 778.
scab, notes, (34) 576.
serum—
antibodies, relation to serum disease, (39) 284.
effect on hemolytic action of peptones, (35) 881.
proteins as anaphylactic antigens, (36) 877.
refractive index, (26) 173.
tests, (35) 179.
use against dog distemper, (28) 185.
utilization in human nutrition, (40) 269.
sickness—
African, complement fixing in, (26) 882.
immunization, (33) 384.
review of investigations, (31) 177.
spermatozoa, longevity outside the body, (38) 170.
stables, location and construction, (28) 188.
stables, mangers and racks for, (28) 386.
strongyles, studies, (39) 686, 892.
tick, tropical, studies, (35) 58.
troughs, sanitary, descriptions, (28) 686.
- Horse-chestnut**—
anthracnose, notes, (35) 851.
flakes, analyses and feeding value, (33) 170.
leaf blotch—
description, (35) 851.
notes, (33) 347.
studies, (35) 154.
treatment, (39) 548.
leaf cast, notes, (37) 658.
leaf diseases, treatment, (34) 747.
Phyllosticta disease, (38) 545.
shoots, *Gloeosporium* on, (36) 52.
wounds, larvae in, (29) 357.
- Horse-chestnuts**—
analyses, (38) 410.
composition and digestibility, (27) 669.
drying, (27) 669.
endotrophic mycorrhiza of, (26) 826.
feeding value, (29) 170; (32) 566; (39) 269.
forcing experiments, (28) 435.
new, in Kew Gardens, (31) 236.
use in bread making, (35) 470.
- Horseflies**—
as anthrax carriers, (39) 161.
egg-laying habits and early stages, (37) 853.
in southern Florida, (37) 565.

Horseflies—Continued.

- notes, (29) 454.
- of Everglades, peculiar habit, (40) 263.
- Horsegram as green manure, (38) 220.
- Horsemint—
 - as source of thymol, (35) 344.
 - thymol content, (39) 712.
- Horsepower—
 - computing, (27) 485.
 - v. electricity for threshing machinery, (28) 591.
- Horsepox, studies, (38) 586.
- Horse-radish—
 - culture, (34) 95.
 - culture experiments, (36) 838.
 - flea-beetle, notes, (29) 761.
 - flea-beetle, studies, (37) 566.
 - webworm, life history and remedies, (28) 656.

Horses—

- abnormal digits in, (27) 369.
- alimentary intoxications of, (26) 887.
- amebae affecting, (27) 477.
- American-bred, in England, (28) 772.
- American trotting, foreign demand for, (31) 169.
- anatomy of, treatise, (32) 278, 682.
- ancestry, (26) 368; (28) 271, 469, 672, 673.
- anesthesia of, (35) 379.
- Anglo-Morman, history, (26) 875.
- antiquity in River Plata region, (28) 469.
- Arabian—
 - discussion, (26) 571.
 - history and influence, (27) 772.
 - in northern Africa, (26) 875.
 - preservation, (31) 368.
 - stud book, (29) 69.
- Ardennais, origin and type, (26) 269.
- Argentine polo, notes, (27) 471.
- army, breeding in Sao Paulo, (27) 875.
- army, improvement, (30) 674.
- army, treatise, (26) 369.
- as affected by—
 - dips, (27) 477.
 - environment, (32) 263.
 - smoke from lead works, (34) 278.
- Assyrian wild, notes, (26) 668.
- bacterial flora of large intestine, (29) 466.
- Belgian draft, monograph, (26) 76; (27) 72.
- Boulonnais breed, origin and characteristics, (26) 168.
- brains of, (31) 168.
- breaking, (38) 775.
- breaking and training, (33) 271.
- breaking and training, treatise, (32) 263.
- breeding, (26) 571; (28) 874; (29) 672; (30) 70; (31) 269, 394; (32) 361; (37) 368, 572; (40) 183.
- breeding—
 - and management, (27) 72; (33) 71; (38) 274.
 - and training, treatise (34) 869.
 - experiments, (27) 772; (29) 666; (32) 767; (35) 869.
 - for English army, (33) 172.
 - for United States Army, (30) 270; (39) 479.
 - government aid to, in Europe, (26) 896.
 - history, (26) 368.
 - in Algiers, government aid to, (29) 573.
 - Austria-Hungary, (28) 269.
 - British Isles, (29) 272.
 - Denmark, (27) 301.
 - France and Hungary, government aid to, (29) 573.
 - Germany, (27) 72; (30) 170.
 - Great Britain, (27) 72; (33) 471; (38) 71.
 - Great Britain, government aid to, (28) 595.
 - Hungary, (26) 269; (27) 672; (28) 875.
 - Ireland, (27) 471.
 - Italy, (26) 770.
 - Japan, (30) 674.
 - Lombardy, (28) 367.
 - Netherlands, (31) 596.
 - New Jersey, (30) 476.
 - Philippines, (30) 869.
 - Portugal, (33) 172.
 - Prussia, (29) 171; (32) 171.
 - Punjab, (30) 767.
 - Rhenish Prussia, (26) 875.
 - Sao Paulo, (29) 368.
 - South Africa, (27) 72; (34) 263.
 - Tunis, (27) 673.
 - Yorkshire, (27) 374.
- notes, (26) 168.

Horses—Continued.

- breeds, British, (29) 571.
- breeds in Norway, (32) 868.
- buying, (30) 270.
- cactus for, (33) 70.
- cannon bone size and age of parents, correlation, (36) 371.
- care and management, (27) 373; (28) 367; (29) 873; (34) 268.
- care and training, book, (33) 571.
- caterpillars injurious to, (26) 456.
- cavalry, improving, (29) 471.
- Celtic, discussion, (26) 571.
- changes in form due to fattening, (28) 172; (34) 174.
- chestnuts of, (26) 672; (28) 772.
- classification, (26) 668.
- climatic environment, (27) 174.
- color factors in hair of, (28) 874.
- color for in Tropics, (26) 75; (28) 575.
- color inheritance in, (32) 361; (40) 870.
- composition of bones, (27) 572.
- concretions in cyst of mammary gland, (27) 888.
- correlation between form and function, (27) 373.
- cost of—
 - feeding in Philippines, (26) 362.
 - keeping, (31) 870; (37) 867; (38) 675, 693, 790.
 - raising, (26) 668; (29) 190; (36) 70; (38) 675.
- cottonseed meal for, (39) 375.
- crushed oats for, (36) 866.
- determination of age, (32) 366.
- digestion experiments, (28) 463; (29) 671; (32) 262.
- diseases of—
 - digestive organs, (40) 86.
 - reproductive organs, (37) 473.
 - respiratory tract, (33) 582.
- dissection, guide, (33) 87; (34) 480.
- dissection of cranial nerves and blood vessels, (34) 188.
- draft—
 - breeds of, (32) 262.
 - fattening for market, (38) 71.
 - feeding experiments, (36) 569.
 - judging, (29) 471; (32) 469; (33) 696.
 - raising, (36) 172.
 - selection, (38) 275.
- early maturity in, (28) 271.
- educated, notes, (28) 172, 470.
- electro-cardiogram of, (30) 269, 784.
- emaciated, treatment, (33) 286.
- English racing, color of, (35) 377.
- evolution in South America, (28) 673.
- exports from United Kingdom, (31) 471.
- factors affecting pulse rate, (28) 768.
- famous American, notes, (26) 368.
- famous sires, (27) 173.
- feed requirements, (35) 773.
- feeding, (26) 164; (29) 171; (30) 174; (38) 169, 576, (40) 875.
- feeding—
 - experiments, (26) 74, 362, 468; (27) 572, 772 (28) 171, 172, 265, 363, 364, 571; (29) 370, 773, 873; (30) 175, 571; (31) 668, 769, 870; (32) 462; (33) 471, 759; (34) 175, 769, 865, 869; (35) 773, 869; (36) 69, 171, 866; (37) 269, 681, 768; (38) 676.
 - in New South Wales, (28) 367.
 - treatise, (27) 471.
- filaria in blood of, (26) 287.
- fish for, (32) 862.
- for the army, (27) 173.
- for the army, treatise, (26) 770.
- forest, discussion, (26) 571.
- fossil, of South America, (28) 269.
- gestation period, determination, (34) 565.
- glandered, infectivity of organs, (27) 782.
- grape marc for, (32) 567.
- great producing families of, (31) 269.
- growth and body development, (30) 467; (33) 471.
- hair and hair whorls, (27) 373.
- handbook, (27) 772, 875.
- handling and feeding in winter, (33) 759.
- harness wounds, (39) 85.
- heated, watering, (27) 174.
- helminths affecting, (27) 583, 888.
- history and development, (31) 769.
- history in America, (30) 174, 673; (32) 366.
- hitching devices for, (30) 690.

Horses—Continued.

- hoof investigations, (27) 673.
- hoofs, essential points, (27) 876.
- host of spotted fever tick, (26) 64.
- Hungarian, filariasis in, (39) 190.
- immunization against—
 - anthrax, (28) 778; (31) 82.
 - forage poisoning, (38) 383, 384; (39) 587.
 - glanders, (27) 379; (28) 286, 779; (30) 481, 578; (31) 83.
 - hemorrhagic septicemia, (28) 881.
 - influenza, (26) 185; (29) 482, 483.
 - rabies, (30) 282.
 - strangles, (28) 784; (32) 882.
 - tetanus, (27) 331; (29) 781; (31) 480.
 - trypanosome diseases, (32) 81.
 - tuberculosis, (26) 85.
- immunized, cause of death in, (40) 881.
- improvement, (35) 377; (37) 768.
- improvement—
 - in Kansas (27) 279; (32) 771.
 - in Porto Rico, (31) 664.
 - value of good sires, (37) 866.
- in Belgium, importation and exportation, (32) 668.
- Germany, (33) 296, 668.
- Kongo, (31) 865.
- North Africa, (32) 469.
- Philippines, (36) 172.
- Philippines, ancestry, (26) 666.
- Scotland, Russia, and New Zealand, (38) 595.
- United States, (31) 73.
- inflammation of brain and spinal cord, (26) 373; (27) 181.
- inflammation of deep air passages of, (31) 287.
- inheritance—
 - in, treatise, (30) 269.
 - of blood-vessel breaking in, (30) 673.
 - callosities in, (26) 571.
 - coat color in, (27) 370, 467, 876; (30) 70, 373, 571; (31) 266, 870; (33) 471.
 - defects in, (34) 576.
 - nontraumatic eye defects in, (26) 672.
 - racing performance in, (27) 875; (29) 773; (30) 674.
- inspection and disinfection for interstate shipment, (34) 185.
- insurance in England, (32) 489.
- intestinal flora of, (30) 673.
- Irish draft, breeding, (26) 369.
- judging, (27) 373; (33) 71; (36) 597; (37) 94.
- jumping conformation, (29) 874.
- labor requirements, (36) 790.
- lameness in, (36) 280.
- lateral cartilages of, (30) 784.
- lavocat for, (30) 67.
- lessons on, (27) 96, 394.
- lice control on, (40) 684.
- light breeds, (39) 479.
- light, eugenics and breeding, (26) 770.
- limb tendons of, (29) 870.
- localization of pigment in, (27) 369.
- maintenance requirements, (26) 665.
- manual, (26) 165.
- marsh, of eastern North Carolina, (28) 772.
- meaning of breed, race, and type, (28) 469.
- measurements, (26) 875; (28) 271, 367, 571, 767, 772, 874; (32) 262, 263.
- mechanism of stomach, (28) 367; (30) 673.
- microorganisms in conjunctival sac of, (26) 176.
- Mongolian, notes, (26) 668.
- mucous membrane of, (26) 480.
- nervous diseases of, (31) 286.
- oat substitutes for, (39) 274.
- of Camargue, history and characteristics, (28) 367.
- Catanduanes Islands, (27) 771.
- East Prussia, measurements, (30) 269.
- Guam, (30) 69.
- South Oldenburg, (32) 263.
- Tunis, description, (27) 571.
- oil cakes for, (38) 572.
- on farms in United States, (31) 167.
- origin and distribution, (31) 564.
- Para grass for, (40) 366.
- paralysis in, (26) 185.
- parasitic affections of, (35) 489.
- Percheron—
 - at International Livestock Show, (31) 270.

Horses—Continued.

- Percheron—Continued.
 - history, (37) 771.
 - origin, (27) 72.
- Philippine, scale of points for, (26) 668.
- pneumococcus immunization, (40) 784.
- poisoning by—
 - barley smut, (27) 882.
 - corn-cockle, (39) 892.
 - ground ivy, (32) 278.
 - Helenium tenuifolium*, (40) 778.
 - horsetail, (29) 281.
 - larkspur, (27) 180; (35) 780.
 - Lathyrus sativus*, (35) 282.
 - locusts, (30) 785.
 - St. John's wort, (32) 278.
 - wheat, (27) 888.
 - Zygadenus*, (33) 177.
- Przewalskii, (26) 571; (27) 471.
- pull exerted by, (36) 388.
- pulse irregularities in, (29) 671.
- pure-bred—
 - in Montana, (36) 470.
 - in Prince Edward Island, (27) 72.
 - in United States, (26) 269.
- race characteristics, (28) 672.
- race, treatise, (34) 869.
- raising, (37) 368, 868; (39) 376; (40) 76.
- raising—
 - in Alaska, (39) 168.
 - Argentina, (38) 576.
 - Denmark, (30) 91.
 - the South, (32) 570.
 - the West, (40) 177.
 - on Indian reservations, (35) 374.
- rations for, (30) 169.
- refuse brewers' yeast for, (33) 568.
- reproductive organs, (27) 369.
- rotation of blood plasma and serum in, (29) 881.
- rutting period in, (26) 768.
- saddle, evolution of type, (27) 772.
- saddle, of Missouri, (30) 872.
- salivary digestion studies, (37) 681, 771.
- sarcosporidia in, (28) 885.
- school lessons on, (32) 494.
- sclerostome parasites of, (36) 280.
- septic diseases in, treatment, (27) 684.
- serum proteins of, (28) 875.
- shipping fever of, (36) 85; (37) 182.
- sick, sodium chlorid variations in serum, (40) 287.
- skin temperature, (27) 69.
- skull measurements, (28) 767, 772.
- small, in modern warfare, (38) 775.
- sorrel color in, (36) 270.
- sound, selection, (36) 769.
- stable devices for, (31) 291.
- standard bred, evolution, (27) 173.
- steamed ration for, (39) 269.
- sterility in, (32) 679.
- strength of bones, (28) 672.
- Suffolk, origin and characteristics, (26) 165.
- sugar for, (33) 467.
- supply in England and Wales, (39) 274.
- susceptibility to tuberculosis, (26) 178.
- teeth, studies, (27) 674.
- textbook, (31) 470.
- Thoroughbred—
 - breeding, (29) 69.
 - breeding and racing, (37) 771.
 - breeding experiments, (27) 772.
 - discussion, (26) 571.
 - fertility in, (28) 772.
 - pedigrees of, (26) 875.
- toleration to mallein, (27) 883.
- tractive power of, (29) 86.
- treatise, (26) 269, 571, 668, 875; (28) 269; (29) 573; (30) 174; (31) 169, 269; (34) 668, 794; (37) 770.
- trotting, of Russia, (30) 571.
- types of, in Europe and India, (29) 171.
- typhoid infections, (40) 289.
- uniform classification for fairs, (33) 697.
- v. motor power, treatise, (29) 388.
- v. motor trucks, comparison, (29) 489; (30) 387, 388.
- v. oxen for field work in Russia, (26) 269.
- v. tractors for farm power, (31) 186; (32) 589.
- v. tractors for hauling gravel, (35) 495.
- value as affected by age, (35) 891.
- weights and measurements, (31) 269.
- wheat bran for, (40) 670.

Horses—Continued.

- wild, in Nevada, (26) 369.
- wild, of Argentina, origin, (31) 269.
- winter ration for, (32) 462.
- work, pasture for, (39) 479.
- Zmudian, notes, (27) 875.

Horseshoeing—

- handbook, (37) 476; (32) 185; (36) 182.
- history of, (31) 488.
- textbook, (31) 887.
- treatise, (29) 292, 682.

Horsetail eradication, (27) 733; (31) 741.

Horsetail, poisoning of horses by, (29) 281.

Horsine, nature and use, (26) 580.

Horticultural—

- associations in Netherlands, (27) 798.
- courses, notes, (29) 41; (31) 897.
- courses, sequence and development, (28) 639.
- education—

- demonstration orchards in, (29) 41, 94.
- in Austria-Hungary, (29) 100.
- in Netherlands, (27) 798; (29) 898; (37) 193.
- in United States, (29) 791.
- papers on, (27) 200.
- report on, (31) 239.

examinations in England, (31) 791.

exhibition at Chelsea, England, (27) 200.

exhibition, royal international, (27) 200.

exhibits for fairs, (30) 197.

experimental fields in South Holland, report, (29) 145.

experimental work in Denmark, (34) 696.

fairs and exhibitions in United States, (28) 796.

flora of Mindanao, (28) 235.

gardens at Lucknow, report, (27) 39, 537; (34) 232.

industries in Germany, (27) 144.

industry in Ghent, Belgium, (29) 338.

inspection in Colorado, (27) 756.

inspection law in Colorado, (28) 238, 450.

institution at Dahlem, report, (28) 794.

institution in Wales, (26) 496.

institutions in Germany, (30) 898; (31) 392.

institutions in Netherlands, (33) 790.

instruction—

- in Belgium, (26) 794; (27) 694.
- continuation schools, (28) 795.
- Netherlands, (27) 694.
- Ontario, (30) 595, 596; (34) 196.
- Proskau, (32) 691.
- Prussia, (30) 793.
- notes, (30) 494.
- papers on, (40) 195.

investigations—

- in Alaska, (33) 637.
- in America, (28) 639.
- in United States, retrospect, (35) 234.
- notes, (40) 42.

law in Arizona, (29) 341.

laws in California, (27) 344; (38) 142.

laws in Washington, (37) 342.

opportunities for educated women, (34) 492.

practice, nutrition basis for, (40) 147.

products, marketing, (26) 741.

products, preservation, (26) 117.

school at Vilvorde, (27) 200.

school for women in France, (30) 200.

school, of Hohenheim, (28) 193.

science, papers on, (39) 541.

societies in Pennsylvania, (37) 888.

societies in United States and Canada, (27) 144.

students, inspection trips for, (35) 498.

varieties, propagation by vegetative means, (35) 141.

winter schools in Germany, (35) 194.

work at Woburn farm, (29) 638.

work, notes, (29) 235.

Horticulture—

- and the war, (40) 833.
- elementary, manual, (40) 795.
- encyclopedia, (32) 436; (36) 137.
- European, application of science in, (29) 41.
- extension work, (40) 833.
- graduate work in, (35) 498, 591.
- handbook, (27) 644; (31) 532.
- home projects in, (40) 296.
- in America, (39) 541.
- Belgium, (30) 141.
- Denmark, (29) 693.
- Netherlands, (28) 838.

Horticulture—Continued.

in New Zealand, (32) 437.

Philippines, (27) 537.

laboratory manual, (33) 899.

north European, notes, (28) 639.

notes, (27) 742.

on German moorlands, (26) 136.

progress in, (31) 239.

relation to climate, (29) 40.

review of literature, (30) 40.

school lessons on, (32) 597; (35) 592.

summer practice course in, (34) 292.

teaching, (40) 898.

textbook, (29) 193; (35) 499.

tropical, treatise, (30) 532.

use of electricity in, (26) 136.

Hospital, cooperative, for rural districts, (31) 294.

Hot—

water heating systems, notes, (31) 893.

weather of 1911 in Kansas, (26) 214.

wave in Los Angeles, (30) 417.

wave in Middle West, (30) 417.

wave in southern California, (38) 210.

Hotbeds—

construction, (31) 393, 791; (34) 494.

construction and management, (28) 694, 838;

(30) 532; (32) 140, 834; (34) 40, 737; (35) 234, 445;

(37) 41; (39) 39.

construction and use, (27) 491; (33) 297.

Hotels—

inspection, (26) 808; (31) 359; (32) 357.

inspection in—

Indiana, (34) 861.

Missouri, (33) 164.

Montana, (33) 67.

South Dakota, (29) 567; (33) 67.

Utah, (33) 165.

Virginia, (29) 766; (32) 661.

law in Florida, (33) 165.

Hothouse milliped, studies, (37) 667.

Hottest region in United States, (34) 118.

House—

cleaning, rules, (28) 694.

drainage, intercepting traps in, (28) 591.

fly—

as carrier of *Davainea cesticillus*, (40) 359.

as host of chicken cestode, (35) 577, 683.

bacteria carried by, (26) 251; (28) 356.

baits and poisons, tests, (31) 455.

biology, (33) 860.

breeding habits, (26) 861; (31) 455; (36) 57;

(39) 861.

chemotropic response of, (35) 466.

control, (26) 758, 899; (30) 756; (31) 158, 455;

(35) 259, 466; (36) 656; (38) 160; (39) 867.

fly, control—

by maggot trap, (39) 562.

in Cleveland, (31) 654.

in Minnesota, (28) 653.

in New Jersey, (32) 551.

fly—

destruction, (27) 457.

development and auto-destruction in

horse manure, (35) 660.

dispersion under city conditions, (36) 56.

distance of flight, (30) 159, 757, 855; (31) 352.

effect of metamorphosis on bacteria, (29) 357.

extermination, (30) 757.

food preference, (36) 855.

handbook, (28) 560; (29) 656; (34) 855.

hibernation, (29) 559; (30) 757; (34) 254; (35)

259; (36) 553; (38) 61, 262; (39) 263.

intermediate host of *Monopyleidum in-*

fundibulum, (26) 561.

larvae, destruction, (33) 455.

larvae, fate of *Ankylostoma ova* in, (39) 468.

larvae, migratory habit, (30) 756.

larvae, parasites of, (30) 457, 552.

lesser, at Leeds, England, (30) 658.

life history and remedies, (37) 560, 853.

maggot trap, (33) 156.

notes, (26) 59; (29) 353; (30) 457; (31) 63; (32)

60; (33) 455; (38) 60.

oviposition as affected by chemicals, (38)

563.

parasite of, (29) 359.

persistence of *Bacillus pyocyaneus* in, (26)

61.

poisons and repellents for, (33) 860; (40) 859.

predacious enemies of, (30) 554.

House—Continued.

- fly—continued
 - preoviposition period, (34) 654.
 - pupation and overwintering, (33) 656.
 - fly, relation to—
 - city garbage, (28) 255.
 - diseases, (31) 852.
 - helminthic diseases, (36) 657.
 - human diseases, (27) 862.
 - leprosy, (29) 457; (31) 851; (36) 554.
 - plague, (33) 456.
 - plague-like disease of rodents, (34) 355.
 - poliomyelitis, (28) 753; (38) 262.
 - public health, (26) 61.
 - surra, (31) 777.
 - temperature, (33) 860.
 - fly—
 - response to ammonia and other substances, (36) 156.
 - response to foods and their fermentation products, (37) 159; (39) 762.
 - seasonal abundance in Montana, (37) 764
 - sense reactions, (40) 859.
 - studies, (37) 655; (38) 362.
 - transmission of anthrax by, (26) 678; (28) 678, 756.
 - transmission of trypanosomes by, (26) 656, 884; (27) 457.
 - transmission of typhoid fever by, (28) 356; (37) 854.
 - treatise, (33) 561; (35) 57.
 - wind-forced migration, (39) 861.
 - fumigation experiments, (39) 161.
 - sanitation, manual and bibliography, (28) 566.
 - servants, training, (31) 490.
- Household—
- accounting—*see also* Home economics.
 - course in, (34) 94.
 - notes, (33) 662.
 - on the farm, (39) 594.
 - accounts, manual, (40) 659.
 - biology, primer, (38) 898.
 - budgets, blanks for, (34) 257.
 - business of, treatise, (40) 796.
 - chemistry, textbook, (40) 493.
 - conveniences, (29) 362; (31) 186, 299; (34) 789; (39) 165.
 - decoration and furnishing, notes, (26) 394.
 - efficiency, paper on, (29) 465.
 - equipment, conservation, (40) 595.
 - equipment, selection, (33) 261.
 - exhibits, suggestions for, (30) 496; (32) 597; (34) 94.
- Insects—
- hydrocyanic acid gas for, (32) 846.
 - notes, (26) 59; (30) 462; (37) 459.
 - remedies, (32) 650; (38) 258.
 - treatise, (32) 449.
- management, teaching, (34) 92.
- management, textbook, (31) 298.
- mechanics, treatise, (36) 891.
- physics, teaching, (40) 492.
- power conveniences, notes, (31) 186.
- science, degree course, (39) 199.
- thrift in, (40) 96.
- waste, analyses, (38) 625, 626.
- waste ashes, analyses, (39) 730.
- waste, disposal, treatise, (34) 790.
- Housekeeping—
- conditions among Pennsylvania Germans, treatise, (34) 257.
 - handbook, (28) 763.
 - instruction in, (28) 599, 795.
 - notes, (28) 461; (31) 299.
 - school at Mährisch-Schönberg, (31) 392.
 - schools in Norway, (27) 195; (29) 597; (32) 92; (37) 294; (38) 794.
 - textbook, (27) 96; (33) 598.
- Houses—
- anchoring in overflow districts, (31) 488.
 - dampness in, (33) 490.
 - disinfection, (32) 456.
 - disinfection with formaldehyde, (32) 683.
 - fire hazard in, (36) 687.
 - for prairie farms, (35) 690.
 - fumigation, (28) 352; (29) 640; (33) 59.
 - heating, (26) 299; (31) 93; (34) 789; (35) 588.
 - heating boilers, tests, (31) 489.
 - heating with electricity, (33) 67, 461.
 - modern improvements for, cost, (31) 291.

Houses—Continued.

- planning and furnishing, (33) 495.
 - regulation of humidity in, (30) 490.
 - screening, (31) 292.
- Housewives, cooperation among, (32) 89.
- Housework, manual, (39) 195.
- Housing and town planning, manual, (31) 293.
- Housing in rural districts, treatise, (33) 893.
- Houstonia coerules as affected by top dressing, (26) 40.
- Hover flies, economic importance, (40) 356.
- "Huaicu," notes, (31) 285.
- Huckleberries—
- acidity, (32) 110; (37) 715.
 - breeding experiments, (36) 443.
 - cost of distribution, (29) 492.
 - drying, (37) 509.
 - garden, cell number in, (27) 733.
 - wood structure, (39) 243.
- Huckleberry juice, preparation, (33) 317.
- Hudu tondli tubers, analyses, (31) 366.
- Huisache girdler, studies, (33) 63.
- Huisache, notes, (29) 441.
- Human—
- duodenal contents, lipolytic properties, (31) 761.
 - energy, rational utilization, (31) 861.
 - jaw, power of, (26) 360.
 - nutrition, treatise, (32) 663; (33) 662.
 - serums, antiguinea-pig hemolytic activity, (35) 679.
 - throat, streptococci from, (28) 674.
- Humates—
- assimilation by plants, (26) 32.
 - effect on plant growth, (30) 323.
 - soluble, as source of nitrogen for plants, (30) 721.
 - soluble, effect on nitrogen fixation, (30) 431; (31) 516.
- Humic acid—
- assimilation by plants, (26) 32.
 - behavior toward anions, (34) 324.
 - nature of, (35) 120.
 - notes, (28) 409, 518; (36) 622.
- Humic—
- bodies, formation from organic substances, (34) 515.
 - fertilizers, nitrifying capacity, (28) 124.
 - substances, formation, (32) 19.
- Humicola n.g. and n.spp., descriptions, (34) 226.
- Humidification, artificial, in textile mills, (31) 70.
- Humidity—
- and vapor pressure over United States, (37) 314.
 - as affected by forests, (29) 842; (31) 415.
 - coefficient of, (29) 626.
 - determination, (27) 315; (31) 22.
 - determination in greenhouses, (33) 638.
 - effect on—
 - alfalfa, (31) 629.
 - gaseous metabolism, (27) 869.
 - grapes, (29) 839.
 - heat transmission, (38) 87.
 - human body, (34) 464.
 - insects, (37) 254.
 - metabolism, (31) 362, 363.
 - seedlings, (33) 826.
 - the organism, (32) 765.
 - in Death Valley, (29) 722.
 - measurement, (34) 416.
 - of air of mines, (29) 121.
 - regulation in houses, (30) 490.
 - regulator, description, (29) 107.
 - relation to—
 - forests, (36) 843.
 - greenhouse culture of roses, (34) 44.
 - haze, fog, and visibility, (29) 120.
 - plant transpiration, (31) 222.
 - seasonal, effect on structure of tropical plants, (31) 221.
 - studies, (33) 806.
- Humification, notes, (36) 622.
- Humic—
- formation, (36) 412.
 - nitrogen, determination in feeding stuffs, (40) 510.
 - nitrogen of protein hydrolysis, origin, (35) 311; (36) 108; (38) 201.
 - notes, (27) 671.
 - of protein hydrolysate, (39) 611.
 - substances, treatise, (34) 708.
- Hummingbird, Costa's, (40) 646.

- Humulol** from hops, (31) 311.
- Humulus lupulus**, sterile dwarfs in, (31) 130, 332.
- Humus**—
- acids—
 - and colloids of, (33) 609.
 - chemistry of, (26) 123.
 - effect on soil bacteria, (31) 521.
 - of Sphagnum turf, (27) 322.
 - review of literature, (28) 119.
 - studies, (26) 720; (29) 124; (35) 628.
 - action of neutral salts on, (39) 514.
 - analyses, (35) 128.
 - as affected by crop rotation, (27) 821.
 - guide to soil fertility, (37) 718.
 - source of carbon for green plants, (35) 131.
 - source of energy in nitrogen fixation, (32) 515.
 - assimilation by higher plants, (27) 26.
 - chemistry of, (30) 122.
 - chlorin index, (40) 619.
 - colloid chemistry, (27) 417; (32) 813.
 - constituents, (27) 500; (28) 29.
 - determination, (28) 19; (30) 205.
 - determination in soils, (26) 406; (27) 496, 499; (28) 123, 203, 204, 312; (29) 718, 796; (31) 110, 111; (33) 205; (34) 806; (35) 513; (36) 614.
 - distribution in California soils, (28) 197; (29) 415.
 - effect on—
 - availability of phosphoric acid, (26) 321.
 - Azotobacter, (38) 329.
 - nitrogen assimilation, (31) 120.
 - plant growth, (29) 417.
 - sandy soils, (31) 732.
 - solubility of phenolite, (29) 319.
 - weathering of silicates, (28) 322.
 - extract, effect in water culture, (28) 817.
 - fertilizing value, judging, (37) 216.
 - forest, effect on plant growth, (32) 618.
 - forest, use in agriculture, (29) 622.
 - formation, (33) 627; (36) 115; (38) 26, 27, 720.
 - formation—
 - and decomposition, (31) 120.
 - from sugar, (34) 515.
 - from vegetable compounds, (34) 516, 619.
 - in soils, (34) 811.
 - of black material of, (30) 28.
 - forming materials, effect on soil bacteria, (37) 120.
 - forming substances, rôle in soil absorption, (32) 319.
 - function in cultivated soils, (26) 422.
 - importance of, (31) 215.
 - in California soils, (30) 714; (34) 324.
 - dark soils, (33) 720.
 - Hawaiian soils, studies, (27) 7.
 - mulched basins, (38) 814.
 - soils, nature and maintenance, (30) 695.
 - loss from soils, (28) 217.
 - nature of, theories concerning, (32) 718.
 - nitrogen, and carbon ratios in soils, (28) 217.
 - notes, (37) 629.
 - of acid and alkaline peats, (30) 715.
 - of arid soils, nitrogen content, (34) 719.
 - of loess soils, (34) 806; (35) 511.
 - phosphoric acid of soils, (37) 121.
 - problem in dry farming, (28) 322.
 - production from manures, (37) 20.
 - relation to—
 - bacteria, (28) 727.
 - soil bacteria, (32) 721.
 - soil fertility, (36) 723; (38) 421.
 - review of investigations, (28) 518.
 - rôle in plant nutrition, (36) 31.
 - silicate, fertilizing value, (34) 19.
 - soils as affected by fertilizers, (28) 520.
 - soluble, effect on soil bacteria, (37) 517.
 - studies, (28) 203; (36) 512, 815.
 - substances, effect on weathering of silicates, (29) 123.
 - sugar, preparation, (36) 625.
 - sugar, relation to soil "sickness," (28) 520.
- Hunger**—
- control in health and disease, treatise, (36) 363.
 - nature of, (33) 566.
 - sensation of, (28) 864.
 - studies, (37) 166; (40) 270.
 - theories concerning, (27) 270.
- Hunterellus hookeri**—
- life history, (26) 863.
 - notes, (37) 360.
- Hunting**, review of literature, (27) 845; (30) 238; (33), 49.
- Hurricane**—
- at Pensacola, Fla., (26) 214.
 - Pacific, of September, 1915, (34) 413.
 - tracks, 1912-1915, (36) 419.
 - tropical, in Louisiana, (34) 413; (38) 511.
- Hurricanes**—
- effect on upper air current, (34) 413.
 - in Jamaica, (34) 615.
 - notes, (36) 19, 719.
 - West Indian, (29) 120; (38) 812.
- Hyacinth**—
- beans, yields, (39) 434.
 - bulbs, culture experiments, (30) 145.
 - bulbs, selection and planting, (30) 795.
 - diseases, treatment, (35) 51.
 - pollen, parasite of, (31) 641.
 - yellow disease, notes, (27) 45; (40) 844.
- Hyacinths**—
- as affected by stimulants, (26) 731.
 - nematodes affecting, (30) 448; (31) 450.
- Hyadaphis**—
- pastinacae, new name for, (39) 657.
 - umbellulariae n.sp., description, (26) 859.
- Hyalodema evansii**, notes, (27) 51.
- Hyalomma aegyptium**—
- hereditary infection in, (30) 460.
 - notes, (29) 58.
 - relation to Mediterranean coast fever, (34) 384
- Hyalopeplus pellucidus**, notes, (27) 155.
- Hyalopora polypodii**, studies, (27) 46.
- Hyalopterus**—
- arundinis—
 - cat-tail as summer host, (37) 461.
 - on Rosaceae, (32) 848.
 - remedies, (40) 161.
 - pruni in Egypt, (38) 158.
 - pruni, remedies, (32) 649.
- Hyalopus geophilus** n.sp., description, (33) 447.
- Hybrid**, graft, in apples, (30) 140.
- Hybridization**—see also Breeding, Animal breeding, Plant breeding, and specific animals and plants.
- and mutation as independent phenomena, (32) 326.
 - effect on maturity and yield in corn, (39) 31.
 - effect on water requirements of plants, (33) 726.
 - experiments with—
 - barley, (28) 431.
 - fruits, (28) 435.
 - rye and wheat, (30) 733.
 - strawberries, (29) 742.
 - tobacco, (27) 839.
 - likeness and relationship in, (26) 365.
 - mutations through, (33) 758.
 - natural, in Betula, (39) 30.
 - of animals in United States, (26) 163.
 - rôle in evolution, (37) 432.
 - spontaneous, in plants, (31) 823.
- Hybridizing**, analytical, paper on, (28) 570, 574.
- Hybrids**—
- animal, bibliography, (26) 163.
 - animal, fertility of, (26) 163.
 - equis, notes, (26) 269.
 - first generation, variation in, (30) 328.
 - graft, connecting threads in, (30) 433.
 - graft, description, (27) 31; (30) 329, 740.
 - graft, notes, (32) 726.
 - pigeon-dove, sterility in, (27) 769.
- Hychlorite**, toxicity, (39) 586.
- Hydnum**—
- coralloides, fruiting forms, (32) 341.
 - coralloides, notes, (27) 653.
 - septentrionale, notes, (28) 56.
- Hydracids**, effect on starch, (26) 107.
- Hydraecia micacea** as a garden pest, (35) 853.
- Hydraulic**—
- computations, definitions and equivalents, (28) 186.
 - conversion tables and equivalents, (38) 187.
 - development and equipment, treatise, (37) 287.
 - ram, automatic, description, (27) 386.
 - ram, development in Germany, (26) 893.
 - ram, notes, (31) 291.
- rams**—
- construction and operation, (34) 885.
 - for farm water supplies, (35) 294.
 - installation and operation, (27) 589; (32) 87.
 - investigations, (28) 683

- Hydraulic**—Continued.
rams—continued.
notes, (27) 292.
types of, (36) 89.
- Hydraulics**—
in United States, (27) 188.
primer, (27) 385.
problems, notes, (27) 789.
textbook, (37) 584.
treatise, (28) 288, 588; (31) 383, 587; (35) 786.
- Hydrazin**—
effect on blood fat and blood sugar, (36) 164.
sulphate, effect on hemolytic reaction, (36) 878.
- Hydrellia griseola**, notes, (27) 560.
- Hydrin**, effect on butter and margarin, (26) 778.
- Hydriodic acid salts**, use against tuberculosis, (29) 481.
- Hydriomena spp.**, in Vancouver Island, (34) 651.
- Hydrocampa (Nymphula) nymphaeata**, notes, (37) 847.
- Hydrocarbons**—
determination, (28) 511.
fatty, development of fungi on, (29) 133.
heavy, detection, (29) 529.
isolation from plants, (26) 106.
petroleum, absorption in the intestine, (29) 768.
- Hydrochelidon nigra surinamensis**, notes, (27) 355.
- Hydrochinon**, effect on cyanogen formation in plants, (28) 527.
- Hydrochloric acid**—
effect on—
action of maltase, (28) 504.
bread fermentation, (27) 268.
hemolytic reaction, (36) 878.
mineral excretion of dogs, (38) 570.
plants, (37) 224.
rotatory power of sucrose and invert sugar, (37) 802.
sprouting of potatoes, (32) 829.
estimation, colorimetric scale for, (40) 505.
forcing plants with, (28) 837.
leaf injury or loss due to, (35) 243.
salts, use against tuberculosis, (29) 481.
toxicity, (28) 662.
- Hydrochloroplatinic acid**, preparation, (37) 409.
- Hydrocyanic acid**—
determination, (32) 300; (34) 11; (35) 413, 503; (40) 804.
determination in—
beans, (27) 310; (36) 714.
feeding stuffs, (33) 506.
plants, (30) 709.
sorghum, (37) 113.
effect on—
catalytic power of soils, (28) 118.
hydrolysis in plants, (26) 531.
plants, (39) 224; (40) 745.
evolution from laurel leaves, (26) 228.
evolution from linseed meal, (27) 276.
for fumigation, preparation, (39) 161.
formation—
from proteins, (30) 802.
in feeding stuffs, (28) 377.
linseed cake, (28) 377, 378.
plants, (31) 826.
seeds, (27) 132; (35) 332.
fumigation of plants with, (31) 57.
- gas**—
as fumigant, (35) 53.
as soil fumigant, (32) 245; (38) 457.
detection, (38) 258.
- gas**, effect on—
baking quality of flour, (26) 357.
cotton, (35) 254.
cucumbers, (30) 142.
insects and plants, (37) 660.
leaf-roller eggs, (40) 162.
plants, (33) 522; (38) 330.
scale insect eggs, (33) 855.
subterranean larvae, (40) 256.
tobacco, (31) 747.
- gas**—
fumigating greenhouses with, (29) 41.
fumigating machines for, (33) 556.
fumigation, (27) 356; (28) 352; (29) 640; (34) 653; (35) 678; (38) 155, 158, 458.
generation by portable machines, (34) 191.
generator, (39) 256.
- Hydrocyanic acid**—Continued.
gas—continued.
insecticidal value, (34) 252.
poisoning by, (39) 161.
toxicity, (26) 864.
use against household insects, (32) 846; (34) 854.
use against mill insects, (30) 155.
in Cassava, (33) 260, 665; (37) 168.
cherry laurel, studies, (29) 133.
flax, (28) 477; (30) 380.
flaxseed screenings, (26) 86.
fungi, (26) 228.
grains in hot regions, (30) 30.
haricot beans, (33) 866.
Isopyrum spp., (39) 27.
Johnson grass, (29) 869.
kafir and sorghum, (30) 584.
leguminous plants, (37) 28.
Ornithopus spp., (34) 525.
plants, (27) 635; (28) 36, 429; (29) 713; (31) 520; (39) 332.
seed and stone fruits, (27) 11.
sorghum, (27) 77; (33) 234; (35) 340; (40) 804.
Tridens flavus, (35) 413.
white clover, (30) 36.
liberation from linseed, (35) 167.
production by bacteria, (30) 802.
relation to maturity of almonds, (26) 228.
role in plants, (28) 128.
utilization by plants, (31) 730.
- Hydroecia micacea**, notes, (26) 353.
- Hydroelectric**—
development at Tallulah Falls, Ga., (27) 316.
development in California, (34) 682.
energy for irrigation pumping, (27) 889.
power, treatise, (36) 783.
works in United States, (27) 188.
- Hydrogen**—
analysis, apparatus for, (40) 111.
chlorid gas, effect on diastase and invertase, (31) 806.
cyanid, detection, (26) 206.
cyanid, determination, (28) 310.
cyanid, in bird's foot clover, (27) 30.
determination, (37) 803.
dioxid, effect on soils, (28) 123.
dioxid solutions, examination, (27) 208.
electrode, description, (34) 712, 804.
electrode potential as affected by pressure, (36) 503.
peroxid—
action on lactic acid and glucose, (28) 202.
as food preservative, (30) 364.
as oxidizer, (37) 409.
as seed sterilizer, (29) 844.
detection in milk, (34) 507.
peroxid, effect on—
amylase of human milk, (30) 311.
autolysis of plant proteins, (26) 801.
ferments, (28) 112.
germination of seeds, (26) 820; (27) 201.
glycerol, (29) 309.
guaiac reaction in milk, (27) 507.
invert sugar, (27) 812.
milk, (29) 806.
milk tests for formaldehyde, (30) 414.
seeds, (27) 132.
peroxid, hydrolytic action, (27) 712.
peroxid, persistence in milk, (35) 11.
peroxid, saccharification of starch by, (28) 19, 609.
preparation and purification, (40) 607.
- sulphid**—
effect on concrete, (28) 589.
generator, description, (39) 714.
precipitation under pressure, (37) 712.
- Hydrogenation**—
catalytic, in presence of carbon monoxid, (38) 409.
of oils, treatise, (32) 416.
- Hydrogen-ion concentration**—
determination, (35) 110; (36) 13, 111; (37) 506; (38) 225; (39) 9.
effect on germination of Gramineae, (38) 24.
effect on growth of barley seedlings, (38) 736.
treatise, (32) 801.

- Hydrogen-ions, effect on—
 baking quality of flour, (27) 166.
 metabolism of *Aspergillus niger*, (30) 630.
- Hydrolysis, effect on nitrogen distribution in fibrin, (38) 310.
- Hydrolyzing agents, effect on starch, (26) 107.
- Hydrometers, classification, (36) 19; (37) 115.
- Hydrometer for latex, (31) 444; (32) 48.
- Hydrophilus piceus*, digestive ferments of, (26) 657.
- Hydrophobia, *see* Rabies.
- Hydroquinone—
 effect on soil microorganisms, (31) 27.
 sterilization of soils by, (32) 816.
 utilization by plants, (36) 329.
- Hydroscaphidae, catalogue, (26) 560.
- Hydrotaea—
 dentipes, studies, (30) 457, 552.
 meteorica in North America, (35) 759.
 spp., studies, (37) 764.
- Hydrotaea, new, (40) 263.
- Hydrotropism in lupine roots, (34) 223.
- α -hydroxybenzoic acid, notes, (31) 312.
- β -Hydroxyglutamic acid, structure, (40) 611.
- Hydroxylamin—
 assimilation by plants, (26) 32.
 hydrochlorid, assimilation by plants, (26) 32.
- Hydroxyl-ion concentration, effect on growth of barley seedlings, (38) 736.
- Hydroxyl-ions, effect on clay, (31) 216; (32) 318.
- ω -Hydroxymethyl furfuraldehyde, production from carbohydrates, (34) 11.
- Hydroxypridins—
 antineuritic properties, (35) 711; (40) 271.
 curative forms, (37) 411.
- Hydrozetes, revision, (38) 460.
- Hygiene—
 and diet in schools, treatise, (29) 363.
 and preventive medicine, treatise, (38) 882.
 and sanitation, military, textbook, (34) 369.
 bibliography, (32) 760.
 domestic, papers on, (30) 763.
 handbook, (28) 461; (30) 63, 763.
 in rural, suburban, and summer homes, (31) 387.
 in schools, report on, (31) 261.
 instruction in Germany, (26) 794.
 public, legislation concerning, (26) 359.
 race, notes, (27) 70.
 treatise, (26) 65, 386; (40) 694, 866, 899.
 tropical, treatise, (28) 78.
 veterinary, treatise, (32) 79.
- Hygrometer—
 chemical, description, (34) 208.
 kite, improved, (37) 513.
- Hygrometry, improved methods, (37) 16; (38) 210.
- Hylastes ruber* n. sp., description, (35) 856.
- Hylastes trifolii*, notes, (31) 848.
- Hylastinus obscurus*, *see* Clover root-borer.
- Hylecoetus*—
 dermestoides, structure and biology, (28) 858.
 sp., notes, (27) 458.
- Hylemyia—
 antiqua, *see* Onion maggot.
 coarctata, biology, (35) 460.
 coarctata, notes, (27) 453, 552, 560; (31) 57; (32) 350; (40) 547.
- Hyles (*Dellephila*) *euphorbiae*, notes, (26) 656.
- Hylesinus—
 n. spp., descriptions, (30) 757.
 oleiperda, notes, (30) 455.
 opaculus, notes, (27) 658.
 spp., notes, (27) 59.
- Hylobius—
 abietis, bionomics, (26) 861.
 abietis, notes, (32) 852.
 abietis, studies, (30) 856.
 pales affecting conifers in New England, (35) 747.
- Hylotrups juniperi* n. sp., description, (34) 254.
- Hymenia—
 fascialis, notes, (26) 250; (28) 158; (29) 456.
 fascialis, studies, (26) 249.
 perspectalis, notes, (28) 854.
 perspectalis, studies, (29) 455.
- Hymenobosmina verimaculata n. sp., description, (28) 162.
- Hymenochaete—
 agglutinans, parasitism, (32) 640.
 noxia, notes, (26) 851; (27) 451; (28) 241; (29) 547, 749; (31) 55; (33) 449, 741; (34) 442, 540, 744, 849; (35) 45, 251, 551; (36) 347, 746, 846; 851, 852; (38) 52, 53, 354; (39) 153, 849; (40) 53, 249, 349.
 noxia on cacao roots, (37) 349.
 noxia, on tea roots, (37) 52.
 noxia, treatment, (29) 552.
 rubiginosa, studies, (32) 845.
- Hymenolepis—
 diminuta and *H. nana* siebold. life history, (37) 163.
 n. spp., descriptions, (26) 561.
 spp., dissemination by flies, (30) 659.
- Hymenomyces—
 association with woody forest plants, (37) 727.
 fruiting bodies, vitality, (30) 350.
 on fruit trees, (37) 47.
 relation to Uredinales, (28) 244.
- Hymenoptera—
 American, notes, (36) 261.
 chalcidoid, notes, (36) 60.
 chalcidoidea, Australian, (39) 154.
 described by Abbé Provancher, lectotypes of, (39) 663.
 description, (36) 759.
 leaf oviposition, (37) 162.
 microsporidiosis in, (27) 459.
 new, (26) 63; (30) 59, 661, 758; (31) 355; (36) 260.
 new pteromalid chalcidoid genus from North America, (35) 857.
 nomenclature, biology, and parasites, (27) 656.
 of Australia, (28) 563.
 British India, (37) 765.
 Connecticut, (37) 765.
 Georgetown Museum, British Guiana, (26) 63, 353; (32) 758.
 Guam, (31) 62.
 India, (31) 159.
 parasitic—
 habits, (34) 363.
 immigrant in Hawaii, (40) 265.
 new, (39) 566, 662, 663; (40) 61, 458, 761.
 of Guiana, (39) 869.
 on lac and sal insects, (31) 62.
 polyembryony, (40) 265.
 predacious and parasitic, notes, (36) 456, 461.
 treatise, (26) 352.
 vespid and sphecoid, in Guatemala, (34) 857.
 W. M. Giffard collection, (37) 855.
- Hymenopterous—
 egg parasites, adult habits, (40) 459.
 parasites, minute, handling, (29) 658.
 parasites, relation of food to reproduction and longevity in, (26) 457.
 wing, horismology, (35) 262.
- Hymenoxys floribunda*, description, (39) 386.
- Hyoscyamus niger*—
 breeding experiments, (30) 631.
 oil, analyses, (36) 803.
- Hypamblyus albopictus*, life history, (32) 352.
- Hypera punctata*, *see* Clover leaf weevil.
- Hyperblyus albopictus*, notes, (30) 362.
- Hyperallus caliroae*, notes, (26) 153.
- Hyperaspis—
 binotata larva, description, (36) 658.
 binotata, studies, (35) 261.
 lateralis, notes, (26) 149.
- Hyperdiplosis producta n. sp., description, (27) 57.
- Hypericum perforatum—
 chemistry and anatomy of, (34) 522.
 poisoning of horses by, (32) 278.
- Hypermallus rusticus*, notes, (28) 356.
- Hyperoides fragariae* n. g. and n. sp., description, (33) 159.
- Hyperplasia, production in plants, (31) 326.
- Hyphantria cunea*, *see* Webworm, fall.
- Hypholoma fasciculare*, composition, (26) 750.
- Hyphomycetes—
 enzymes in, (30) 241, 805.
 iron-storing, studies, (27) 527.
- Hypoaspis armatus* n. sp., description, (38) 63.
- Hypochoeris radicata*, geographical distribution, (26) 335.

Hypochlorite—*see also* Chloramin-T and Dakin's solution.

applying automatically to sewage, (34) 390.
calcium, effect on glands bacillus, (40) 478.
of lime in water, effect on vegetation, (29) 242
solution—

determining carbonic acid in, (39) 205.
indicator end-points, (39) 414.
studies, (39) 185, 786.

solutions—

alkaline, methods of analysis, (40) 113, 309.
antiseptic value, (40) 182, 284.
preparation, (40) 709.
prevention of blood clotting by, (40) 182.
stabilization, (40) 710.

Hypochlorites—

action on proteins, (36) 877.
and hypochlorite substitutes, (40) 284.
determination in solutions, (40) 410.

Hypochlorous acid, antiseptic action, (34) 675.

Hypochnus—

burnati n.sp., description, (35) 351.
cucumeris, notes, (26) 446.

sacchari, notes, (40) 157.

solani—

and Rhizoctonia solani, identity, (34) 443,
notes, (29) 152; (30) 47; (33) 849.
studies, (36) 847; (37) 47, 350.

sp., notes, (28) 649.

sp. on tea, (39) 452.

violaceus, notes, (29) 51.

Hypochrella oxyspora, notes, (28) 545.

Hypocotyl, elongation, (28) 39, 739; (34) 134.

Hypocotyl, studies, (30) 331; (32) 520.

Hypoderma—

bovis, biology, (34) 881.

bovis, in Canada, (29) 357; (30) 552; (33) 775.

bovis, larval stages, (30) 254.

brachysporum, notes, (26) 345.

deformans n.sp., description, (35) 354.

larva, lateral spiracles in, (40) 62.

lineatum, biology, (34) 881; (39) 157.

spp.—*see also* Ox warble fly.

life history, (32) 60.

strobicola, notes, (26) 852.

Hypodermella sulcifera, notes, (26) 852.

Hypocaeaphilippus, destructive to pineapples, (29) 655.

Hypomyces—

ipomoeae on sweet potatoes, (31) 544.

pernicius, notes, (31) 843.

rubi, studies, (34) 352.

Hyponomeuta—

malinellus—

biology, (32) 554.
bionomics and remedies, (30) 755.
notes, (33) 653.
remedies, (34) 355.

of Sweden, (37) 158.

padella, hymenopterous parasite of, (26) 658.

parasites of, (35) 659.

spp., notes, (32) 754.

Hypophosphites, determination, (40) 409.

Hypophysin, notes, (30) 578.

Hypophysis extract, effect on milk production, (30) 375; (37) 173.

Hypoplasia mammaria, effect on milk, (27) 176.

Hypoteromalus—

percussor n.sp., description, (38) 768.

viridescens, notes, (30) 59.

Hyposter interjectus n.sp., description, (35) 262.

Hypostena—

sp., notes, (29) 52.

sp., parasitic on sugar cane borer, (34) 753.

torricis, notes, (34) 556.

Hypophilphites, effect on metabolism and excretion, (26) 69.

Hypothenemus—

ritchei n.sp., description, (39) 565.

tuberculosis n.sp., notes, (27) 453.

Hypotherites nigrolineatus n.sp., description, (30) 60.

Hypoxanthin—

effect on plant growth, (28) 324.

in hops, (32) 502.

in rabbit meat, (26) 563.

Hypsometer, description, (26) 442.

Hypsometers, tests, (36) 144.

Hypsometric map of Russia, (34) 118.

Hypopygia costalis, *see* Clover-hay worm.

Hyssopus officinalis, oil of, (36) 803.

Hysterium coffeanum, notes, (38) 51.

Hysteronura setariae, *see* Aphis bituberculata and Aphis setariae.

Ice—

analyses, (33) 165.

and mercury, notes, (32) 810.

and salt, lowest temperature with, (31) 615.

bacteriological examination, (37) 468.

box, homemade, description, (36) 687.

chest, description, (27) 273.

conditions in Danish waters, (33) 717.

cream—

analyses, (28) 862; (30) 178, 678; (32) 162, 357, 856; (35) 176.

and ices, manufacture, treatise, (34) 860.

bacteria in, (34) 165; (35) 164; (38) 868; (40) 777.

bacteriological examination, (37) 468; (38) 75.

bacteriological standard, (28) 166.

binders and fillers, effects of, (36) 78.

brick, manufacture, (29) 376.

determination of fat content, (27) 497, 499; (33) 16; (37) 507; (40) 81.

determination of overrun, (31) 875.

examination, (26) 461, 660; (27) 665; (28) 65; (29) 59; (31) 556, 656.

cream factories—

computer for, (31) 276.

in Minnesota, (37) 777.

inspection in New Jersey, (32) 254.

law in Ohio, (33) 662.

cream—

fat standard, (27) 763.

freezers, tests, (33) 382.

from homogenized cream, (29) 879.

function of colloids in, (30) 476.

gelatin or gum in, (29) 865.

laboratory guide, (38) 281.

manufacture, (27) 179; (32) 253; (34) 859; (36) 177; (40) 81, 675.

manufacture, treatise, (33) 65.

marketing, (32) 874.

overrun in, (33) 80.

plants, inspection, (31) 359.

plants, sanitary code for, (33) 81.

powders, examination, (26) 660; (30) 664.

quality as affected by gelatin, (36) 875.

recipes, (36) 79.

relation to typhoid fever, (28) 258; (34) 256.

sampling, (31) 210.

sampling for Babcock test, (30) 274.

smoothness and keeping quality, (33) 769.

standards, (26) 275; (29) 777; (32) 254, 356, 856, 873; (36) 561.

storage, (32) 356.

stores, inspection in Virginia, (29) 766.

studies, (31) 874; (32) 253, 660.

sugar substitutes in, (39) 183, 872; (40) 777, 802.

viability of streptococci in, (32) 174.

effect on atmospheric temperature, (31) 511.

effect on stream flow, (30) 318.

exudation from plant stems, (32) 221.

for cream cooling, (37) 592.

for the farm, (34) 892.

frazil and anchor, dissipation, (28) 716.

harvesting, (26) 386; (29) 88; (31) 92; (36) 687.

harvesting by electricity, (28) 187; (30) 892; (31) 291.

house, small, description, (38) 476.

houses, construction, (26) 386; (28) 788; (29) 88; (30) 487, 489; (32) 591; (33) 80; (34) 892; (36) 390, 687; (38) 190, 292.

houses, description, (31) 93.

houses for prairie farms, (35) 689.

infectiousness, (32) 253.

manufacture, (27) 461.

of Greenland and its foeism, (38) 812.

patrol over north Atlantic Ocean, (31) 615.

precooling plant, description, (35) 391.

scald of fruits, studies, (29) 135.

storm in Illinois, (27) 413; (29) 121.

storm in Michigan, (35) 115.

storms, forecasting, (35) 808.

storms of New England, (32) 210.

supplies in railway stations and trains, (32) 456.

use in preserving foods in homes, (30) 165.

use on dairy farms, (32) 591.

vapor pressure, (38) 811.

- Ice-age question, (40) 811.
 Iceberg debris, nitrifying organisms in, (30) 818.
 Icebergs, melting, temperature associated with, (28) 716.
 Iceerya purchasi, *see* Cottony cushion-scale.
 Iceerya zeteki n.sp., description, (31) 251.
 Ichneumon—
 disparis, notes, (28) 455.
 extrematidis, notes, (29) 855; (31) 752.
 flies—
 from Java, (40) 458.
 new, (26) 352; (30) 59; (36) 259.
 north American, revision, (34) 454.
 of America, (27) 662.
 of Great Britain, treatise, (27) 359.
 type species of, (30) 661.
 koebeli, notes, (27) 656.
 laetus, I. canadensis, and I. funestus, identity, (34) 657.
 nigricornis, notes, (28) 654.
 sp., parasitic on grapevine sphinx, (26) 250.
 Ichneumonid parasites, correct names, (40) 760.
 Ichneumonidae—
 in British Museum, revision, (31) 656.
 in Quebec, (36) 461.
 of British India, (37) 765.
 of Great Britain, treatise, (34) 657.
 pimpline, studies, (34) 758.
 revision, (27) 662; (30) 59; (35) 262.
 Ichneumonoidea, families and subfamilies, (40) 65.
 Ichthyura inclusa, notes, (26) 856.
 Icterus bullocki, destruction of locusts by, (28) 351.
 Idacantha magna, notes, (28) 555.
 Idaein, studies, (34) 709.
 Idaho—
 Station, notes, (26) 395; (27) 696; (28) 797; (29) 97, 794; (31) 795, 900; (32) 694, 797; (33) 496; (34) 797; (35) 596; (37) 397; (38) 797; (39) 694; (40) 98, 495, 600.
 Station, report, (31) 795; (37) 95; (39) 397.
 University, notes, (26) 393, 694; (27) 696; (28) 300; (29) 97, 794; (30) 497, 698; (31) 795, 900; (32) 694, 797; (33) 496; (34) 495; (35) 596; (36) 796; (37) 397, 497; (38) 399, 797; (39) 694; (40) 495, 696.
 Idechthis nigricoxalis n.sp., description, (35) 252.
 Idia fasciata, notes, (29) 354.
 Idiocerus—
 fitchi, notes, (35) 853; (37) 157.
 gemmisimulans n.sp., description, (34) 657.
 maculipennis, notes, (34) 752.
 niveosparus, remedies, (38) 360.
 provancheri—
 biology, (34) 451.
 life history, (35) 553.
 notes, (37) 157.
 scurra (I. gemmisimulans), studies, (38) 764.
 sp., notes, (26) 857; (27) 453.
 Idiogastra, new suborder, (40) 265.
 Idiopterus nephrolepidis, notes, (28) 854.
 Idris sp., notes, (31) 650.
 Igenhauzia triloba, notes, (29) 441.
 Igenhauzia tuberos, analyses, (28) 359.
 Ignition, effect on solubility of soil phosphates, (26) 726, 803; (28) 312.
 Iguana tick, studies, (40) 359.
 Iguanias, blood parasite of, (26) 883.
 Ilecystis spp., notes, (27) 883.
 Ilex aquifolium, variations in salt content, (29) 28.
 Ilex paraguayensis, culture, (32) 142.
 Ilishia partheonogenetica, reproduction, (39) 656.
 Illinois—
 Beekeepers' Association, report, (38) 164.
 country life conference, (27) 399.
 Pellagra Commission, report, (28) 663.
 River, improvement, (28) 890.
 Station, financial statement, (27) 396; (29) 194.
 Station, notes, (26) 96, 694, 796; (27) 98, 300, 397, 696; (28) 93, 195, 696; (29) 396, 697; (31) 300, 795; (32) 94; (33) 99, 600; (34) 96, 797; (35) 196, 596, 900; (37) 700.
 Station, report, (27) 396; (29) 194; (31) 396; (33) 96; (35) 94; (37) 297; (40) 198.
 University, notes, (26) 96, 694, 796; (27) 98, 300, 397, 696; (28) 93, 195, 396, 696; (29) 97, 396, 697; (30) 497; (31) 197, 300, 795, 900; (32) 94, 395; (33) 99, 496, 600; (34) 96, 797; (35) 596, 900; (36) 694; (37) 700; (40) 496.
 Illosporium on apple, (39) 52.
 Illuminating gas, manufacture from sewage sludge, (26) 624.
 Illumination, dark ground, treatise, (26) 82.
 Imbibition in plants, (38) 729.
 Immigrants—
 as farmers, (31) 294.
 from United States to Canada, (26) 896.
 preparation for the farm, (27) 597.
 Slavic and Jewish, on Connecticut farms, (31) 93.
 Immigration—
 in different countries, (31) 490.
 in United States, (30) 591.
 Immortel—
 canker, description, (27) 451.
 trees, disease of, (35) 354.
 Immune—
 and anaphylactic reactions, studies, (37) 76.
 bodies—
 discussion, (26) 579; (27) 576.
 formation, (26) 277.
 hemolytic, alterations in during immunization, (26) 277.
 leucocyte-dissolving, notes, (30) 477.
 source of, in lymphs, (26) 277.
 hemolysin, studies, (39) 584.
 processes, rôle of fats in, (40) 380, 676.
 Immunity—
 and anaphylaxis, (39) 79.
 and infection, treatise, (30) 878; (38) 482.
 and tissue transplantation, (38) 583; (39) 487, 886; (40) 578.
 and tolerance, (40) 82.
 antitoxic, albumin-globulin ratio in, (39) 388.
 digest of data, (27) 882.
 infection, and specific therapy, treatise, (33) 476; (38) 781.
 physical theory of, (29) 174.
 produced by intravascular injections, (36) 575.
 production in guinea pigs by nasal instillation of horse serum, (35) 485.
 reactions, chemistry of, (32) 78, 178.
 reactions in hydrated and concentrated tissue, (39) 887.
 reactions, relation to specific precipitation, (36) 478.
 relation to—
 fermentative reaction, (40) 882.
 leucotactic substances, (33) 477.
 livestock diseases, (37) 688.
 protein split products, (30) 379.
 specific parenteral digestion, (38) 580.
 research, relation to chemistry, (26) 83.
 rôle in the war, (40) 477.
 rôle of enzymes in, (40) 579.
 studies, (26) 884; (33) 82; (34) 674; (35) 380; (39) 284.
 studies by tissue culture method, (40) 179.
 to infections of unknown cause, absorption method, (40) 678.
 transmission from mother to offspring, (27) 476.
 treatise, (26) 481, 676; (27) 76; (32) 578; (35) 73, 573.
 Immunization—*see also* Anthrax, Tuberculosis, *etc.*
 active, new method of, (35) 881.
 effect on immune bodies, (26) 277.
 methods for, (32) 78.
 of horses, cause of death in, (40) 881.
 paper on, (27) 576.
 pneumococcus, of horses, (40) 784.
 products and their use, (40) 882.
 Immunochemistry, progress in 1910, (28) 777.
 Immunologic properties of uveal pigment, (39) 583.
 Immunology—
 cellular, studies, (38) 78.
 colloidal chemistry in, (36) 178.
 terms used in, (32) 475.
 treatise, (34) 275; (37) 76.
 Immuno-therapy, review of investigations, (28) 180.
 Impatiens sultani—
 axial abscission in, (31) 129.
 injury and abscission in, (32) 627.
 Imperata—
 arundinacia, analyses, (27) 68.
 cylindrica koeinigi, notes, (26) 362.
 cylindrica, use in paper industry, (36) 809.
 exaltata, notes, (30) 229.
 sp. as a green manure, (36) 324.
 Imperial Royal High School of Agriculture of Vienna, (30) 194.

- Imphee—**
culture experiments, (36) 332.
silage, analyses, (27) 469.
- Impregnation, artificial, in mammals, (29) 66.**
- Inanition, effect on creatinin content of muscle, (26) 158.**
- Inbreeding—**
and crossbreeding, effects on development, (40) 323.
effect on—
cattle, (30) 869.
fecundity and vigor, (30) 267.
poultry, (30) 71.
vigor and egg production, (33) 572.
formulas for, (32) 665; (38) 367.
history and criticism, (26) 772.
in animals, effects, (31) 564.
in Germany, (31) 70.
in Jersey cattle, (37) 776.
measurement, (30) 66, 564; (34) 564.
notes, (37) 769.
numerical measure, (38) 269.
review of literature, (29) 466.
studies, (32) 665; (33) 97, 758; (35) 771; (38) 65.
variations under, (34) 864.
- Inclosure movement in England, (40) 688.**
- Incubation—**
and brooding, manual, (29) 373.
artificial, temperature for, (27) 471.
carbon dioxide in, (31) 172.
experiments, (32) 868; (33) 76.
natural and artificial, (31) 173.
notes, (27) 96; (33) 98, 273, 695; (38) 796.
periods of birds, treatise, (37) 774.
temperature experiments, (36) 770.
- Incubators—**
cost of operating, (36) 72.
description and tests, (27) 73.
disinfection, (28) 73.
effect on moisture content of eggs, (26) 270.
electrical, for bacteriological work, (29) 222; (35) 134.
large, tests, (32) 570.
operation, (31) 670; (33) 77; (36) 571; (38) 876.
temperature for, (34) 268.
- Incurvaria—**
capitella, notes, (36) 754.
rubiella, notes, (33) 652.
rubiella, remedies, (33) 466.
- India rubber, see Rubber.**
- Indian—**
gum, detection, (27) 14.
meal moth—
life history, (38) 562.
notes, (26) 453; (32) 651; (33) 353.
remedies, (32) 245.
red, effect on linseed oil, (28) 714.
schools, course of study for, (35) 895.
summer, notes, (36) 419.
summer, use of term in 1778, (35) 419.
- Indiana—**
Corn Growers' Association, report, (30) 37.
Station—
financial statement, (26) 899; (28) 695.
notes, (26) 96, 494, 694; (28) 93, 396; (29) 698; (30) 698; (32) 198; (35) 596, 697, 900; (36) 98, 694; (37) 97, 196, 497, 700, 896; (38) 96, 198, 797; (39) 95, 300, 695; (40) 496, 696, 900.
publications, list, (39) 899.
report, (30) 598; (32) 693; (34) 795; (36) 795; (39) 93; (40) 796.
report of director, (26) 899; (28) 695.
- Indican—**
detection in urine, (34) 808.
excretion as affected by diet, (30) 65.
urinary, elimination during fasting, (34) 863.
- Indicanuria in children, relation to meat ingestion, (29) 365.**
- Indicator from myrtle berries, (40) 409.**
- Indicators—**
from animal tissues, (35) 204; (39) 804.
mechanical, inaccuracies in, (29) 788.
quinone phenolate theory, (37) 409; (40) 202.
- Indigo—**
as green manure, (27) 337; (38) 337.
breeding experiments, (38) 526.
caterpillar, notes, (27) 54.
composition and use, (27) 727.
culture, (30) 335, 632.
- Indigo—Continued.**
culture experiments, (27) 233; (31) 733; (38) 336, 526; (40) 332, 625.
culture in Bihar, (34) 35, 36; (37) 441; (38) 234.
culture in India, (28) 736; (39) 229, 230.
diseases, (31) 145, 641; (33) 545.
pruning experiments, (40) 629.
"psylla" disease, studies, (31) 755.
root development, (40) 629.
soils of Bihar, (40) 620.
waste, composition and use, (27) 727.
wilt, notes, (29) 446; (37) 441.
yielding glucosids, physiology of, (35) 333.
- Indigofera—**
anil as green manure, (37) 320.
arrecta as host plant of pink disease, (35) 155.
arrecta, culture experiments, (30) 632.
galeoides, culture, (30) 335.
spp. as a green manure, (36) 324.
- Indol—**
detection, (37) 503.
excretion as affected by diet, (30) 65.
from artificial digestion and decay of proteins, (30) 65.
- Industrial—**
club work in rural schools, (31) 297.
clubs and contests in Indiana, (28) 694.
clubs and contests in Oregon, (31) 393; (32) 394.
clubs, junior, in New Mexico, (27) 395.
cooperation, bibliography and textbook, (29) 594.
development of Nevada, (26) 599.
education in—
Columbus, Georgia, (30) 298.
high schools of Minnesota, (34) 195.
Indiana, (28) 497, 896.
New Mexico, (34) 793.
Oregon, (31) 97.
public schools, (28) 15.
Rhode Island, (28) 497.
investigations in Basle, Germany, (28) 65.
products, inspection in Belgium, (27) 14.
resources of Texas, (33) 788.
schools in Korea, (30) 794.
training—
for boys and girls, (28) 499.
in Canada, (31) 596.
in colored schools of Kentucky, (30) 298.
in public schools of Indiana, (32) 595.
wastes, loss of fertilizers in, (37) 630.
work in Hamilton County, Indiana, (29) 394.
- Industry, relation to education, (26) 296.**
- Infantile—**
malnutrition, prevention, (35) 472.
paralysis—*see also* Poliomyelitis.
relation to insects, (36) 654; (28) 161; (35) 55, 280.
relation to stable flies, (29) 358, 559, 560.
studies, (39) 186.
- Infants—*see also* Children.**
adaptation of gastric juice to diet of, (32) 66.
amount of water required by, (29) 62.
and adults, digestion in, (34) 167.
artificial feeding and digestive disturbances, (32) 662.
boiled milk for, (30) 760; (32) 857.
care and feeding, (30) 763; (31) 360, 557, 660.
condensed milk for, (26) 81.
determination of surface area, (30) 669.
diet and care, (34) 861.
digestion as affected by starch and lactose, (33) 663.
digestion experiments, (34) 167.
dried milk for, (32) 760.
energy metabolism of, (33) 464.
energy requirements, (39) 876.
fasting, metabolism of, (30) 562.
feeding, (34) 258, 662; (36) 559; (40) 68, 269, 272, 364, 379, 462, 555, 560, 661, 869.
- feeding—**
and clothing, (32) 66.
and metabolism, treatise, (34) 460.
charts for, (31) 557.
dangerous practice in, (28) 259.
studies, (35) 165, 663.
treatise, (26) 763.
food requirement, (38) 267.
- foods—**
analyses, (35) 558.
determination of fitness, (31) 413.

Infants—Continued.

foods—continued.

- increasing fat content of, (32) 661.
- proprietary, composition, (32) 660.
- proprietary, nutritive value, (31) 461.
- proprietary, use, (32) 661.
- use of starch in, (28) 359.
- gaseous metabolism in, (32) 461.
- gastric and pancreatic fat digestion in, (29) 365.
- goat's v. cow's milk for, (32) 66.
- growth, as affected by maternal ingestion of placenta, (40) 566.
- growth of, (36) 263.
- importance of breast milk for, (30) 861.
- measurement of surface area, (35) 369.
- metabolism—
 - and nutrition, studies, (34) 461.
 - of, (34) 462; (36) 763.
 - of calcium and phosphoric acid in, (29) 166.
 - principles, (27) 767.
 - review of literature, (35) 559.
- milk for, (26) 171; (32) 873; (36) 558; (39) 282, 883.
- modified milk for, (33) 163.
- mortality, notes, (27) 365.
- newborn, energy requirements, (32) 257.
- newborn, nutrition and growth, (40) 661.
- newborn, physiology of, (34) 861.
- nursing, as affected by change of diet, (31) 662.
- nutritional disturbances, (36) 865.
- pasteurized milk for, (31) 460; (40) 364.
- prenatal care, (31) 463.
- protein metabolism, (35) 766.
- protein requirement, (34) 68.
- raw milk for, (34) 659.
- respiration experiments, (30) 369.
- respiration incubator for, (32) 860.
- respiratory exchange of, (26) 766.
- respiratory metabolism in, (26) 69.
- role of mineral salts in metabolism, (29) 366.
- soy bean gruel for, (34) 859.
- soy beans and condensed milk for, (35) 556.
- stomachs, acidity of, (34) 167.
- stomachs, gastric secretion, (40) 71.
- summer diarrhea in relation to heat, (34) 462.
- tricalcium phosphate for, (32) 857.
- value of various sugars for, (31) 762.
- wey for, (33) 752.

Infection—

- and immunity, treatise, (30) 878; (35) 573; (38) 482.
- and resistance, (39) 679.
- and resistance, treatise, (32) 270.
- hereditary, in cattle ticks, (30) 460.
- immunity, and specific therapy, textbook, (38) 781.
- immunity, and specific therapy, treatise, (33) 476.
- leucocytic reaction in, (26) 83.

Infections—

- acute, in laboratory animals, (31) 479.
- mixed, serodiagnostics, (40) 288.
- of unknown cause, specific antisera for, (40) 678.
- relation to diet, (31) 464.
- specific therapy of, (31) 479.

Inflammation products, effect on reaction of milk, (28) 680.

Inflammations, nonspecific, of joints, (36) 676.

Influenza—

- equine—see also Pleuropneumonia.
- etiology, (26) 587; (27) 86, 685; (31) 87; (36) 85.
- immunization, (26) 185.
- notes, (26) 373, 384; (27) 384; (37) 182; (39) 582.
- papers on (31) 176.
- pectoral form, (26) 787; (28) 483; (32) 278; (34) 681; (36) 182.
- pectoral form, immunization, (29) 482, 483; (31) 184; (33) 183.
- pectoral form, treatment, (29) 385, 483; (30) 285, 385.
- prevalence in Prussia, (27) 181.
- prevention, (34) 184.
- serum diagnoses, (40) 289.
- studies, (28) 184, 482; (30) 186; (31) 382; (39) 392, 492, 493.

Influenza—Continued.

equine—continued.

- treatment, (26) 288, 486; (27) 289, 685; (28) 287, 483; (32) 184, 379, 682; (33) 286; (35) 282; (38) 788.
- virus carriers of, (30) 185.
- in United States, (37) 274.
- relation to bedbugs, (40) 548.
- treatment, (31) 378.
- Infra-red rays absorption by soils, (34) 414, 817.
- Infusoria, purification of water by, (27) 317.
- Infusorial earth—
 - analysis, (32) 424.
 - for filtering fruit juices, (33) 318.
- Inga laurina as a honey plant, (27) 856.
- Inga, revision, (36) 32.
- Ingenhouzia, glands of, (39) 431.
- Inheritance, see Heredity.
- Injuries, effect on seed germination, (26) 131.
- Ink berry, Chinese, host plant of fruit fly, (26) 758.
- Ino ampelophaga, notes, (31) 548.
- Inoculation experiments, celluloid cylinder for, (37) 549.
- Inodes exul n.sp., notes, (28) 841.
- Inorganic constituents, determination in urine, (26) 161.
- Inosit—
 - monophosphate in wheat bran, (32) 17.
 - occurrence in grape leaves, (27) 731.
 - phosphoric acid of—
 - cottonseed meal, (36) 299; (37) 502.
 - cottonseed meal and wheat bran, (29) 805.
 - feeding stuffs, (39) 14, 675.
 - phytin and phosphoric acid esters, (27) 406, 712.
 - utilization in the animal organism, (36) 365.
- Insanity among farm people, (32) 791.
- Insect—
 - activity, relation to temperature and moisture, (30) 545.
 - and Pest Act, (28) 642.
 - behavior as factor in applied entomology, (37) 156.
 - blood cells, growth in vitro, (37) 759.
 - cages, wire, shading effect, (36) 455.
 - egg parasites, hosts of, (32) 246.
 - eggs as affected by spraying mixtures, (32) 449.
 - eggs, toxicity of volatile organic compounds to, (38) 888.
 - enemies of cotton-boll weevil, (27) 59.
 - flagellates, parasitic in vertebrates, (33) 862.
 - galls—
 - American, (33) 857; (40) 554.
 - descriptions, (39) 868.
 - in Europe, (30) 852.
 - morphology and biology, (29) 353.
 - notes, (31) 155.
 - of Ohio, (32) 557.
 - uses, (39) 154.
 - larvae, arrest of growth, (31) 751.
 - larvae as affected by heat, (28) 752.
 - larvae, subterranean, fumigation, (40) 256.
 - metabolism, influence of atmospheric moisture, (36) 855.
 - migration, notes, (27) 452.
 - parasites—
 - cages for, (38) 566.
 - determining relations in mixed infestation, (40) 164.
 - inoculation of disease germs by, (26) 658.
 - introduction into Hawaii, (34) 548.
 - notes, (30) 454, 455, 753.
 - of domestic animals in Argentina, (26) 780.
 - of domestic fowls, (29) 253.
 - reproduction and longevity in, (26) 457.
 - studies, (34) 751.
 - parasitism, (27) 856; (30) 59.
 - pests of Egypt, (40) 856.
 - pests of the household, (38) 258.
 - pests, summary of information, (39) 255.
 - photography, apparatus for, (37) 156.
 - photography, notes, (27) 255.
 - physiology and morphology, notes, (27) 53.
 - powder, examination, (38) 207.
 - psychology, treatise, (27) 452.
 - p pae, temperature-metabolism curve, (32) 67, 766.
 - records, methods of taking, (31) 848.
 - survey of North Carolina, (39) 358.
 - trap for refuse box, (34) 60.
 - traps, illuminated, tests, (34) 851.
 - visitors of spirea and blackberry, (40) 547.

Insectary, portable, (40) 752.

Insecticide—

contact, new, (39) 462.
dealers, licensed, (27) 663.
decisions, (26) 65, 658.
emulsions, preparation, (26) 153.
law in California, (29) 852.
law in Montana, (28) 352.
law in New Jersey, (28) 352.
law in Ohio, (31) 740.
laws in United States, (36) 39.
laws, notes, (28) 642.
new, description, (36) 252.

Insecticides—see also Sprays and specific forms.

analyses, (26) 65; (27) 441, 755; (29) 235; (31) 49, 142, 340, 740; (32) 169, 438; (33) 47, 735; (34) 436, 639; (35) 141; (36) 744; (37) 53, 114, 243; (38) 643.

and fungicides, compatibility, (32) 243.
and their application, (40) 452.
arsenical, chemistry of (28) 308.
classification and compatibility, (31) 751.
compatibilities, (35) 838.
compatibility chart, (39) 39.
contact, mode of action, (26) 753; (34) 252; (40) 752.

contact, physical properties, (39) 461.
effect on flowering plants, (36) 733.
effect on germination of wheat, (30) 837.
emulsions for, (37) 759.
formulas, (37) 460; (40) 543.
inspection, (29) 146; (34) 40.
inspection and analyses, (39) 240, 345.
inspection in Maine, (36) 467.
inspection in Ohio, (31) 740; (36) 744.
laws, (29) 266; (40) 45.
manual, (29) 341.
new, tests, (33) 339, 340.
notes, (26) 256; (27) 53, 453, 655; (28) 148; (31) 248; (34) 449; (35) 356.

oil, effect on citrus fruits, (29) 354.
petroleum, (39) 462.
petroleum, selection, (40) 59.
phenolic, studies, (35) 208.
physiological effects, (28) 752.
preparation and use, (26) 47, 48, 154, 539, 840, 841; (27) 45, 61, 344, 845; (28) 48, 238, 450, 642, 841; (29) 146, 236, 459, 853; (30) 442, 534, 642; (31) 58, 141, 153, 635; (33) 252, 639; (34) 436, 539, 548, 643, 651, 739; (35) 743; (36) 53; (38) 843.
review of investigations, (31) 848.

rules and regulations, (38) 56.
sampling, (29) 852.
spreading qualities, (27) 753.
standard v. nonstandard, (34) 232.
summary of information, (39) 461.
superficial tension and wetting power, (27) 548.
tests, (26) 638, 753; (28) 48; (29) 758; (30) 156; (31) 350; (32) 158, 846; (34) 60; (35) 149; (37) 53; (38) 156; (39) 762; (40) 161, 753.
toxicity, (33) 855.
toxicity formula for, (29) 52.
treatise, (31) 517.

Insects—

affecting—

stored food in Hawaii, (40) 259.
stored grain, (40) 855.
stored products, (39) 161, 463, 761, 862.
weeds in Minnesota, (38) 155.
air-conditioning apparatus for, (33) 855; (36) 152.
and disease, paper on (32) 151.
flower color, relationship, (31) 57.
plant diseases, law in Canada, (26) 51.
plant diseases, treatise, (28) 745.

as affected by—

evaporation, (31) 350.
heat, (27) 856.
humidity, (37) 254; (39) 761.
Roentgen rays, (28) 57.
smelter gases, (38) 458.
temperature, (31) 349.
temperature and moisture, (33) 252.

as carriers of—

bacterial infections, (30) 153.
chestnut blight fungus, (34) 853.
fire blight, (37) 53; (38) 558.
infection, (28) 356.
autohemorrhage in, (28) 853.

beneficial—

in Hawaii, (37) 847.

Insects—Continued.

beneficial—continued.

in Illinois, (28) 155, 853; (35) 356; (36) 853.
in New York, (28) 156.
introduction into Arizona, (28) 853.
introduction into California, (30) 753.
introduction into Hawaii, (35) 755.
selection and breeding, (38) 558.
to tobacco, (35) 54.

bibliography, (26) 246; (28) 155.
biting, relation to infantile paralysis, (28) 161.
biting, relation to swamp fever in horses, (32) 754.

blood-sucking—

geographical distribution, (31) 452.
relation to kala azar, (28) 159.
salivary secretion, (32) 557.
transmission of diseases by, (26) 150; (28) 57, 756.

boring and girdling, remedies, (33) 556.

boxes, (39) 359.

brains of, studies, (27) 552.

bred from cow manure, (27) 757.

carnivorous, in region of Paris, (30) 853.

carotinoids in, (34) 865.

citrus, fumigation, (39) 161, 463.

coccobacilli infections of, (30) 54, 551.

collection, (27) 453.

collection and preservation, (31) 452, 792; (32) 755; (38) 156.

collection of Massachusetts Agricultural College, (28) 248.

color and design of, (33) 168.

color disguise in, (26) 246.

conservation of types, (27) 656.

control about abattoirs, (37) 560.

control by—

birds, (40) 255.
fungi and bacteria, (38) 357.
parasites, (27) 559; (38) 258.
parasites and predacious enemies, (36) 406.
defence against parasites, (34) 751.

destruction by—

beetles, (27) 560.
contact insecticides, (26) 753; (34) 252.
cyanid gas, (36) 456.
dynamite, (34) 125.
heat, (34) 653; (36) 197.
hot water, (34) 50.
moles, (34) 58.
plumber's blow lamp, (33) 684.
vegetable parasites, (30) 155.

destruction in—

seed rooms, (38) 241.
soils, (38) 457.
stored corn, (31) 849.
determining increase and spread, (37) 257.
development as affected by temperature, (31) 847.

disease-carrying, remedies, (31) 58, 351.

dispersion by wind, (37) 254.

dissemination—

in shipments of sugar cane, (28) 555.
of chestnut blight by, (31) 451.
of disease by, (38) 558; (39) 558.

distribution—

as affected by temperature, (27) 655.
graphically illustrating, (38) 858.
in climatic zones, (30) 852.
of pear blight by, (30) 149.

dust sprays for, (31) 449.

ecology, notes, (40) 648.

economic—

in California, (40) 56.
in Costa Rica, (38) 358.
in Hawaii, (40) 854.
nomenclature, (26) 552.
of East Africa, (37) 760.

effect on germination of cotton seed, (26) 534.

effect on parthenogenetic blossoms, (26) 540.

endoparasites of, (34) 753.

entomophagous, terminology, (36) 53.

entomophagous, use in agriculture, (36) 754.

exotic, protection against, (34) 851.

factors affecting development and life, (28) 752.

feeding value for poultry, (38) 71.

fertilization of red clover by, (33) 131.

flying, diseases transmitted by, (34) 576.

forest, see Forest insects.

fumigator for, (27) 564.

Insects—Continued.

- fungus diseases of, (35) 55.
- fungus parasites of, (33) 258, 556, 856.
- gall, (39) 664, 866.
- garden, *see* Garden insects.
- glass traps for, (26) 153.
- grain-infesting, destruction, (39) 363.
- greenhouse, (36) 152.
- greenhouse, apparatus for removing, (39) 463.
- greenhouse, remedies, (38) 857.
- habits and instincts, treatise, (32) 846.
- herbivorous, feeding habits, (28) 553.
- hibernating in Spanish moss, (28) 654.
- household—
 - and camp, remedies, (38) 857.
 - habits and remedies, (29) 653.
 - hydrocyanic acid gas for, (32) 846.
 - notes, (27) 552; (28) 554, 653; (30) 462; (39) 861.
 - remedies, (28) 352; (31) 394; (32) 650; (34) 854.
 - treatise, (32) 449.
- hygrophy and phototropism in, (30) 752.
- immunity principles in, (39) 358; (40) 164.
- imported into New Jersey, (33) 855; (34) 355; (38) 857.
- imported, losses from in United States, (37) 559.
- in British Museum, (37) 560.
- injurios—
 - bibliography, (29) 652.
 - bureaus for study, (39) 861.
 - control, (26) 840.
- injurios, control—
 - by natural enemies, (31) 848.
 - in Colorado, (28) 450.
 - Japan, (31) 241.
 - United States, (38) 256.
 - various countries, (26) 445; (31) 145; (32) 340.
 - West Virginia, (28) 842.
- injurios—
 - fumigation experiments, (26) 65.
 - handbooks, (33) 495, 745.
- in Algeria and Tunis, (30) 154; (31) 848.
- Antigua, (29) 756; (38) 256; (39) 556.
- Arizona, (26) 452; (28) 853; (31) 155; (33) 745; (35) 656; (37) 846; (40) 853.
- Australia, (27) 552.
- Baden, (31) 539.
- Barbados, (26) 552; (30) 752; (31) 547; (32) 551; (34) 753; (36) 252; (40) 648.
- Belgian Kongo, (34) 851.
- Bengal Presidency, (32) 449.
- Bihar and Orissa, (34) 250; (37) 357; (40) 57.
- Borneo, (38) 54.
- Brazil, (30) 454, 657.
- British Columbia, (27) 53; (30) 53; (32) 551; (35) 253; (38) 155.
- British East Africa, (32) 347; (37) 54, 460.
- British Guiana, (31) 547; (36) 252, 853; (37) 847; (38) 459; (40) 163.
- British West Indies, (27) 53.
- California, (35) 254; (39) 461.
- Canada, (27) 356; (28) 653; (32) 448; (33) 746; (38) 459, 556, 857; (39) 556.
- Ceylon, (26) 553; (34) 652; (40) 453.
- Colorado, (34) 651; (37) 459; (40) 161.
- Connecticut, (26) 855; (35) 53; (37) 254; (39) 761.
- Crimea, (33) 652.
- Cuba, (35) 348; (38) 556.
- Cyprus, (39) 160; (40) 648.
- Delaware, (36) 540.
- Denmark, (27) 543; (30) 47.
- District of Columbia, (31) 349.
- Dutch East Indies, (34) 744; (35) 243; (37) 246; (38) 548.
- Egypt, (26) 453; (37) 54.
- England, (27) 552; (29) 653.
- Federated Malay States, (38) 460; (40) 260.
- Fiji, (27) 453; (32) 448; (36) 252; (39) 557.
- Finland, (28) 159, 555; (32) 847; (38) 256.
- Florida, (37) 659; (39) 461.
- France, (39) 556; (40) 845.
- Georgia, (35) 461; (37) 847; (38) 256.
- German colonies, (29) 653.
- German East Africa, (28) 555; (30) 154, 657.

Insects—Continued.**injurios—continued.**

- in Germany, (27) 452; (30) 249; (37) 460.
- Gold Coast, (30) 752; (35) 463.
- Government of Moscow, (29) 852; (33) 652.
- Great Britain, (28) 148; (35) 649; (36) 853; (38) 460; (40) 648.
- greenhouses, (34) 59; (35) 253.
- Grenada, (30) 746; (38) 857.
- Hawaii, (32) 753; (34) 59; (37) 459, 847; (38) 557.
- Hood River Valley, (35) 252.
- Illinois, (28) 155, 853; (35) 356; (36) 853.
- India, (31) 249; (34) 549; (36) 355, 653; (38) 157, 257; (39) 162, 255, 557, 862; (40) 260.
- Indiana, (28) 554; (31) 452; (35) 461; (38) 556; (40) 752.
- Ireland, (26) 553; (28) 653; (29) 555; (33) 554; (40) 260.
- Italy, (38) 460.
- Jamaica, (34) 349; (36) 457; (38) 459; (40) 259.
- Japan, (38) 857.
- Java, (29) 852.
- Kansas, (37) 357; (38) 653; (40) 352, 452.
- Kief, (38) 256.
- Klosterneuburg, (30) 240.
- Laysan Island, (27) 549.
- Lesser Antilles, (27) 552.
- Madras, (30) 853; (33) 359; (40) 854.
- Manitoba, (30) 53.
- Maryland, (27) 552; (36) 854; (38) 154.
- Massachusetts, (38) 256.
- Mauritius, (32) 449; (33) 554; (34) 754; (40) 648.
- Michigan, (32) 650.
- Minnesota, (26) 59; (32) 753; (35) 461; (38) 155; (39) 861.
- Missouri, (31) 349; (38) 653.
- Montana, (31) 648; (32) 754; (35) 852; (37) 255; (40) 452.
- Nebraska, (26) 552; (39) 252.
- New Hampshire, (35) 461; (38) 155.
- New Jersey, (32) 550; (34) 158; (36) 252, 854; (37) 255; (39) 761.
- New Mexico, (38) 653.
- New South Wales, (27) 756; (34) 652; (39) 656.
- New York, (26) 146; (28) 156; (29) 252; (33) 252; (34) 752; (36) 855; (40) 163.
- Nigeria, (27) 453; (30) 546; (33) 153; (34) 851.
- North Carolina, (26) 856.
- Northern Territory of Australia, (35) 657.
- Nova Scotia, (30) 752; (38) 356; (40) 57.
- Nyasaland, (30) 154; (34) 549; (36) 153; (39) 461.
- Oklahoma, (37) 157.
- Ontario, (27) 452; (30) 53; (31) 155; (35) 356; (36) 456; (38) 358, 545; (39) 862; (40) 648.
- Oregon, (32) 651; (38) 857.
- Pennsylvania, (37) 459; (38) 556.
- Philippines, (26) 856; (33) 856; (38) 459.
- Porto Rico, (33) 554; (34) 752; (36) 252; (37) 255; (40) 56.
- Pusa, (32) 847; (35) 55.
- Quebec, (32) 151; (34) 250, 449; (35) 356; (37) 156, 157; (38) 459; (40) 259, 648.
- Queensland, (28) 249.
- Rhode Island, (33) 153.
- Russia, (31) 155, 648; (40) 163.
- St. Lucia, (29) 852; (34) 651; (40) 453.
- St. Vincent, (30) 752; (34) 651; (37) 460.
- Salgir, (34) 652.
- Sao Thomé, (39) 656.
- Scotland, (27) 552; (31) 648; (34) 652; (36) 252.
- Seychelles, (33) 555.
- South Africa, (33) 856; (36) 653; (39) 556.
- South America, (37) 460.
- South Carolina, (40) 647.
- South Dakota, (32) 854.
- South Rhodesia, (38) 554.
- Stavropol, (30) 753; (37) 760.
- Straits Settlements, (40) 260.
- Sumatra, (29) 853.

Insects—Continued.

injuriously—continued.

- In Surinam, (30) 853.
 Surrey pine lands, (39) 656
 Sweden, (40) 163.
 Tasmania, (36) 846; (37) 357; (40) 753
 Taurida, (31) 547, 548, 848.
 Tennessee, (27) 756; (31) 248; (38) 357.
 Texas, (37) 459.
 the Orient, (30) 753.
 Tobago, (40) 352.
 Tortola, (39) 862.
 Trinidad, (37) 53; (40) 352.
 Turin, (35) 463.
 Uganda, (26) 246; (28) 249; (32) 847; (34) 549; (35) 463; (37) 560; (39) 556, 656.
 Union of South Africa, (31) 548.
 Virgin Islands, (28) 752.
 Virginia, (31) 248; (35) 461.
 West Africa, (35) 463.
 West Indies, (28) 248; (30) 546; (35) 44; (37) 460; (38) 54; (39) 548, 762; (40) 260.
 West Virginia, (36) 653.
 Western Australia, (38) 856.
 Wisconsin, (27) 53; (38) 155.
 Wye, (28) 248; (30) 53; (34) 651.
 Yakima Co., Washington, (38) 653.
 international control, (31) 49, 699.
 introduction into United States, (38) 154.
 law, (27) 200, 356; (29) 252.
 legislation in Canada, (26) 256.
 legislation in Ceylon, (30) 146.
 manual, (27) 551; (34) 651; (35) 460; (36) 355.
 notes, (26) 147, 753; (27) 452, 756, 857; (28) 351, 352, 450, 752; (29) 52, 251, 353, 453, 652; (30) 153, 249, 355, 448; (33) 58, 59; (34) 548; (35) 156, 852; (36) 457, 549; (38) 557.
 physiological investigations, (31) 452.
 remedies, (26) 48, 539; (27) 299, 357, 439, 845, 857; (28) 452; (29) 146, 640, 658; (31) 57, 635, 848; (32) 447; (34) 40, 249, 548, 748; (37) 143, 247, 544; (38) 558.
 review of literature, (26) 51; (27) 148; (28) 345.
 textbook, (38) 94.
 to animals, (27) 53, 453, 552; (35) 853; (37) 560.
 animals, domestic, (28) 753, 855; (29) 252, 454.
 bees, (26) 63; (27) 459.
 books, (25) 354; (28) 159.
 cork, (26) 60.
 cork stoppers, (31) 155.
 crops, *see specific crops*.
 man, (27) 53, 453, 552; (28) 248, 554; (29) 252; (30) 53; (32) 448; (33) 746; (34) 651; (38) 459.
 man and animals in the Southwest, (35) 853.
 man and animals in Zanzibar, (37) 560.
 man, treatise, (33) 856; (37) 156, 760.
 stored products, remedies, (37) 459.
 treatise, (26) 752; (27) 452; (31) 539; (35) 835; (36) 236; (37) 395.
 inoculation of disease germs by, (26) 658.
 inspection law in Colorado, (26) 154.
 instinct of, treatise, (29) 52.
 internal parasitic, resistance to toxic and digestive fluids, (33) 855.
 killing bottle, (39) 359.
 lessons on, (31) 394.
 life history, manual, (31) 155.
 life history studies, method, (40) 752.
 light traps for, (39) 656.
 living, capture by cornfield ants, (33) 258.
 local environmental complex, (38) 358.
 longevity, (33) 652.
 longevity as affected by temperature, (32) 244.
 longevity in captivity, (37) 355.
 meadow, notes, (36) 297.
 microbial diseases of, (37) 76.
 microparasites of, (36) 355.
 mill and stored grain, remedies, (30) 155.
 mill, destruction by heat, (29) 253.
 mimicry, (27) 656.
 mounting for school work, (31) 394.
 nature book on, (40) 795.
 observing, collecting, and studying, (38) 357.
 of Adlin District, British Columbia, (34) 651.
 Barbados, (40) 56.
 California, (28) 155; (29) 158

Insects—Continued.

- of California, treatise, (28) 853; (33) 553, 652.
 central Europe, manual, (35) 254.
 Connecticut, (26) 147; (37) 765.
 fresh water, (39) 555.
 Government of Stavropol, (30) 553.
 Great Britain, treatise, (38) 557.
 Guam, (28) 158.
 Hawaii, (30) 852.
 Hawaii, common names of, (30) 657.
 India, life history, (27) 856.
 Kansas, (39) 255.
 Labrador, (29) 353.
 New Jersey, (36) 152; (39) 761; (40) 854.
 North America, key, (33) 652.
 pellagrous localities, (27) 156.
 pond and stream, (27) 394.
 South India, treatise, (34) 549.
 spruce and pine cones, (40) 163, 164.
 Victoria, handbook, (26) 147.
 Virgin Islands, (35) 657.
 on greenhouses and ornamental plants, (40) 753.
 imported nursery stock, (35) 755.
 imported orchids, fumigation, (40) 352.
 mulberry in Formosa, (40) 163.
 orchard, in British Columbia, (37) 459.
 orchard, notes, (40) 161, 163, 256, 352.
 orchard, remedies, (28) 352.
 outbreak, in California, relation to birds, (26) 346.
 papers on, (38) 256.
 parasites of, (26) 882; (33) 746.
 parasitic—
 and predacious, utilization, (28) 453.
 in Canada, (36) 457.
 on cactus, (33) 233.
 parasitism by Entomophthorae, (32) 245.
 penetration by gases, (36) 251.
 periodic events, (39) 317.
 photographing, (28) 252; (36) 53.
 phytophagous, parasitism, (31) 848.
 plant-sucking, studying in situ, (37) 53.
 pocket guide, (38) 761.
 poisoned bran mash for, (34) 61.
 poisonous, of desert, (39) 153.
 pollination of—
 alfalfa by, (31) 134, 831.
 apples by, (31) 554.
 clover by, (31) 134.
 fruits by, (28) 237.
 polyhedral bodies in, (37) 253.
 polyhedral virus, (40) 255.
 preserving in tropical climates, (27) 656.
 progressive immunity, (37) 54.
 protecting wheat flour substitutes from, (40) 59.
 psychic life, handbook, (40) 647.
 rearing for experimental work, (37) 758.
 recognition among, (37) 459; (38) 154.
 relation to—
 animal diseases, (36) 479.
 anthrax, (37) 179.
 apple blossom blight, (31) 346.
 beet blight, (34) 350.
 blight in fruit, (34) 648.
 cherry gummosis or canker, (32) 645.
 chestnut bark disease, (35) 756.
 chestnut blight, (29) 753; (34) 448.
 coloration of flowers, (28) 226.
 cucumber mosaic disease, (35) 350.
 cucurbit wilt, (35) 546.
 disease, (38) 358; (40) 259, 649.
 disease in man, (27) 862; (29) 756.
 equine influenza, (28) 482.
 finger-and-toe disease of plants, (31) 148.
 fire blight, (36) 351.
 flowers, (26) 392.
 gipsy moth wilt disease, (35) 758.
 lymphangitis, (28) 379.
 man, treatise, (33) 856.
 milk infection, (26) 674.
 pellagra, (33) 555.
 plague, (29) 756.
 plant diseases, (35) 253.
 poliomyelitis, (26) 654; (29) 753; (30) 753; (35) 280; (36) 354.
 pollination, (40) 655.
 pollination of pears, (30) 643.
 potato late blight, (27) 544.
 precipitation, (37) 355.
 rice gwa-bo, (36) 448.]

Insects—Continued.

- relation to—continued.
 - rotation systems, (27) 554.
 - spirochetosis, (29) 883.
 - spread of ergot, (27) 47.
 - sugar beet curly top, (34) 241, 646.
 - surra, (28) 756.
 - temperature and humidity, (35) 52.
 - Ustilago antherarum, (26) 552.
- remedies, (26) 154.
- resistance to hot water, (34) 843.
- resistance to sprays, (31) 350.
- scale, *see* Scale insects.
- social habit among, (40) 553.
- soil, behavior in evaporation, carbon dioxide, and ammonia gradients, (38) 54.
- soil-infesting, notes, (29) 653.
- soil, notes, (30) 154.
- soil, relation to climate, (38) 357.
- studies for schools, (31) 793.
- study of, importance, (32) 846.
- subterranean, remedies, (26) 256, 561.
- sucking, effect on potato foliage, (34) 449.
- sucking, relation to fire blight, (33) 744.
- taxonomy, (40) 753.
- transmission of—
 - anthrax by, (26) 678; (30) 780.
 - diseases by, (26) 760; (30) 249, 455, 546; (32) 552, 846; (37) 848.
 - leprosy by, (26) 759.
 - swamp fever by, (38) 788.
 - Trypanosoma evansi, (31) 777; (37) 180.
 - trypanosomes by, (27) 783.
 - verruca by, (34) 355; (37) 356, 358.
 - treatise, (26) 552; (28) 553; (33) 153, 495.
 - tuberculosis in, (31) 155.
 - underground, destruction, (32) 246.
 - underground, method of study, (33) 855; (37) 254.
 - use in study of heredity, (38) 358.
 - use in study of zoogeography, (27) 656.
 - vision in, (31) 452.
 - wilt disease of, (33) 856; (37) 253.
 - wilt virus, (40) 255.
 - wind-forced migration, (39) 860.
 - wings of, treatise, (40) 351.
 - wonders of instinct, (40) 255.
 - wood-boring, investigations, (32) 755.
 - wood-boring, remedies, (27) 555; (33) 725; (34) 652.
- Insemination, artificial, in birds, (31) 370.
- Insolation, increase with elevation, (30) 713.
- Insulator, description, (28) 37.
- Institute for Fermentation and Starch Manufacture in Berlin, (32) 92.
- Institute for Phytopathology in Wageningen, (35) 243.
- Insurance—
 - against sickness and accidents in Switzerland, (32) 792.
- companies—
 - cooperative, in Minnesota, (32) 688.
 - farmers' mutual, (37) 391.
 - mutual, (40) 593.
 - mutual, in Pennsylvania, (27) 339.
 - mutual, in Wisconsin, (28) 895.
- compulsory, in United Kingdom, (27) 488.
- fire, *see* Fire.
- hail, *see* Hail.
- mutual, in Illinois, (36) 791.
- Interferometer, use in agricultural investigations, (33) 315.
- Inter-Mountain Good Roads Association, proceedings, (29) 291.
- Internal organs as affected by exercise, (28) 272.
- Internal secretions, studies, (26) 264.
- International—
 - Association of—
 - Dairy and Milk Inspectors, (30) 273; (33) 701; (34) 473.
 - Poultry Instructors and Investigators, (26) 698; (27) 106, 400, 675; (40) 499.
 - Tropical Agriculture and Colonial Development, (28) 500.
 - catalogue of—
 - bacteriology, (32) 578; (35) 574; (39) 190.
 - botany, (35) 29; (37) 630.
 - chemistry, (33) 201; (34) 407; (37) 501.
 - general biology, (36) 366.
 - meteorology, (29) 510; (35) 318, 421.

International—Continued.

- catalogue of—continued.
 - physiology, (32) 565; (34) 658; (40) 869.
 - serum physiology, (39) 190.
- Commission of Agriculture, (30) 700.
- Conference on Seed Testing, (26) 44.
- Congress—
 - for Combating Deterioration and Adulteration in Foodstuffs, (28) 700.
 - of Agriculture, (27) 700; (28) 499; (29) 101.
 - Agriculture, animal economy section, (30) 868.
 - Applied Chemistry, (27) 499; (30) 202.
 - Comparative Pathology, (32) 271.
 - Entomology, (26) 398; (27) 399; (31) 452.
 - Genetics, (31) 200.
 - Home Economics, (35) 897.
 - Home Education, notes, (28) 500.
 - Home Training at Ghent, (31) 393.
 - Horticulture at Ghent, (31) 239.
 - Rice Culture, (30) 198; (31) 200.
 - School Hygiene, (32) 457.
 - Tropical Agriculture, (34) 227.
 - Viticulture, report, (35) 646.
 - Zoology, (33) 450.
- Cooperative Alliance, proceedings, (35) 893.
- Dairy Congress, (30) 398.
- Dairy Congress, report, (27) 472, 676; (36) 473.
- Entomological Congress, proceedings, (27) 656.
- Federation of Dairying, (28) 178; (31) 376.
- Forestry Congress, report, (33) 541.
- Institute of Agriculture, (29) 1; (30) 899; (33) 91; (39) 497, 690.
- Institute of Agriculture, decade of work, (38) 701.
- Irrigation Congress, (31) 88; (35) 885.
- Livestock exposition, (36) 199.
- Meteorological Congress, (31) 213.
- Phytopathological Congress, (30) 700; (31) 699.
- Radiotelegraph Conference of 1912, (29) 120.
- Refrigeration Congress at Vienna, (27) 460.
- Road Congress, (34) 287.
- Union of Municipal Dairies, (32) 773.
- Veterinary Congress, (26) 373; (29) 100; (34) 575.
- Zoological Congress, proceedings, (27) 655.
- Interpolation as means of approximation, (34) 796.
- Interstate Dry Farming Conference, report, (28) 633.
- Interstitial cells, studies, (39) 177.
- Intestinal—
 - autointoxication, relation to amines of organ extracts and body fluids, (34) 778.
 - diseases, studies, (39) 285.
- flora—
 - as affected by milk feeding, (33) 460.
 - of cattle, (35) 76.
 - of man and animals, (26) 581.
 - regulation through diet, (40) 867.
 - relation to diet, (36) 664, 665.
- impaction in calves, (26) 279.
- inflammation, chronic, in bovines, cultivation of bacillus, (27) 482.
- inflammation, specific chronic, in bovines, (28) 181.
- juice of dogs, alkalinity, (29) 268.
- movement, cause, (28) 567.
- parasites of the dog, (40) 778.
- protozoa, flagellated, (40) 186.
- putrefaction as affected by water drinking, (34) 763.
- trichinae, studies, (40) 476.

Intestine, large—

- absorption from, (28) 665.
- enzymes of, (36) 366.

Intestines—

- absorption of fat in, (32) 563.
- human, fermentation and putrefaction in, (30) 262.
- methods of examining, (29) 408.
- physiology of, (28) 763.
- resorption of sugar in, (29) 263.
- Intoxication, leucocytic reaction in, (26) 83.
- Intracutaneous—
 - absorption, specificity, (28) 482.
 - reaction, diagnostic value for contagious abortion in cows, (29) 586.
- Intradermal test for tuberculosis, (30) 893.
- Intranephritis in domestic animals, (26) 176.
- Intumescences on plants, (39) 353, 355.

- Inulase**—
formation in *Aspergillus niger*, (40) 518.
in tobacco plant, (31) 204.
of *Aspergillus niger*, activity, (37) 203.
- Inulin**—
behavior toward hydrolyzing agents, (31) 314.
in chicory root, (38) 502; (40) 325, 727.
metabolism in chicory, (28) 821; (30) 432.
metabolism in plants, (34) 427.
saccharification by ultraviolet rays, (26) 802.
studies, (39) 202, 524, 732.
utilization by yeasts, (31) 224.
utilization in diet cures, (30) 464.
- Inulo-coagulase**, notes, (36) 127.
- Invalids**, goat's milk for, (32) 873.
- Invert activity**, determination, (40) 12.
- Invertase**—
absorption of hydrogen chlorid by, (31) 806.
action, kinetics of, (31) 108.
activity, influence of certain substances on, (34) 803.
adsorption, (35) 313.
as affected by sodium chlorid, (34) 408.
as affected by ultraviolet rays, (26) 203.
distribution in beets, (34) 524.
formation and regulation by mold fungi, (31) 730.
formation in yeast, (28) 202, 308.
from yeast, hydrolyzing properties, (32) 803.
hydrolysis of sucrose by, (30) 811.
in alfalfa, (32) 411.
 Aspergillus niger, notes, (28) 727.
 cane sugar, (36) 802.
 potato leaves, (35) 334.
 tobacco plant, (31) 204.
investigations, (31) 410.
occurrence in honey, (26) 710.
role of viscosity in action of, (26) 505.
temperature coefficients of decomposition, (26) 407, 504.
- Invertebrates**—
physiology of, treatise, (31) 154.
transmission of diseases by, (30) 249.
- Iodates**, determination, (34) 712.
- Iodids**, effect on caseification of milk, (28) 609.
- Iodimetry**, use of arsenious oxid in, (40) 609.
- Iodin**—
action on hypophosphorous and phosphorous acids, (40) 409.
and iodine preparations, (39) 387.
chlorid, antiseptic value, (40) 779.
compounds, relation to bacteria, yeast, and mold fungi, (29) 133.
compounds, use against spirochetosis in fowls, (29) 484.
determination, (27) 497.
determination in—
 organic matter, (32) 505; (35) 11; (36) 561.
 presence of chlorids, (35) 803.
 presence of organic matter, (34) 504.
 water, (29) 797.
- effect on—
 corn, (33) 522.
 hemp, (33) 432.
 saccharification of starch, (28) 609.
 the circulation, (40) 274.
for breeding sows, (40) 185.
for hairlessness in pigs, (39) 187.
for prevention of goiter, (39) 187.
in foods, (35) 555, 761; (36) 561.
 oil, germicidal power, (40) 882.
 thyroid gland, (34) 580.
 tuberculous tissue, (33) 283; (34) 580.
manufacture from seaweed, (27) 724.
titrations, source of error in, (34) 805.
toxic effect on plants, (38) 629.
toxicity, (39) 586.
use against hemorrhagic septicemia in cattle, (31) 780.
use in absorption of tuberculous and other tissues, (33) 677.
vapor, larvicidal value, (34) 359.
- Iodipin**, nature and use, (26) 580.
- Iodoantipyrin**, periodids of, (36) 313.
- Iodoform**—
antiseptic and germicidal value, (37) 176.
detection in ethyl alcohol, (39) 312.
insecticidal and larvicidal value, (34) 359.
- Iodotannic reagent**, (40) 610.
- Iole**, new. description (40) 351.
- Ionization in war wounds**, (40) 779.
- Ions**—
absorption by living and dead roots, (34) 334.
absorption by plants, (33) 521.
antagonistic activity, (28) 730.
diffusion and localization in plants, (31) 325.
effect on oxidative processes in the body, (33) 69.
- Iowa**—
Bee Keepers' Association, proceedings, (32) 852.
College, notes, (26) 194, 395, 694; (27) 197, 600, 697, 799; (28) 396, 696; (29) 97, 600, 698; (30) 796; (31) 99, 397, 496, 796; (32) 396, 694, 900; (33) 99; (34) 96, 396, 495; (35) 96, 300, 500, 900; (36) 499; (37) 196, 299, 600; (38) 198, 699; (39) 95, 695; (40) 696, 900.
Highway Commission, organization, (31) 890.
State colleges, closer union, (28) 792.
State Dairy Association, (30) 377.
State Drainage Association, proceedings, (33) 392.
Station, notes, (26) 494; (27) 197, 600; (28) 696; (29) 97, 600, 698; (30) 796; (31) 397; (32) 396, 694; (33) 99; (34) 96; (35) 900; (36) 499, 694; (37) 299, 497; (38) 198; (39) 95, 695; (40) 900.
Station, report, (35) 696; (37) 95; (40) 397.
- Ipecac alkaloids**, protozoocidal and bactericidal action, (38) 180.
- Iphiaulax clypeolus n. sp.**, description, (26) 352.
- Ipidae**—
Canadian, economic importance, (31) 848.
injurious to tropical plants, (30) 660.
key, (39) 65.
- Ipbobracon**—
grenadensis, notes, (40) 554.
saccharalis n.sp., description, (40) 554.
- Ipomoea**—
albivenia, fiber from, (39) 442.
batatas, analyses, (31) 863.
leari, leaf heteromorphy in, (34) 626.
pes-caprae, leaf development of, (30) 522.
purpurea, heredity in, (38) 750.
reptans as affected by seasonal humidity, (31) 221.
- Ips**—
n.spp., descriptions, (35) 856.
pini, notes, (30) 657.
pini, studies, (36) 554.
(*Tomicus*) radiatae n.s.p., description, (34) 361.
typographus killing healthy fir trees, (37) 465.
- Irbisia brachycerus**, notes, (29) 454.
- Iridomyrmex humilis**, see *Ants*, Argentine.
- Iris**—
borer, notes, (28) 157; (34) 752; (35) 54.
breeding, (36) 142.
culture in Alaska, (29) 743.
flowers, abnormalities, (37) 130.
flowers, oxidases in, (35) 130.
flowers, variation in, (35) 329.
germanica, chondriosomes of, (34) 524.
germanica, epidermal cells, (39) 528, 734.
germanica, oxidase in, (31) 626.
leaf blotch, studies, (34) 354.
leaf spot, studies, (30) 349.
pallida bacteriosis, studies, (26) 751.
pseudacorus, carotinoid content, (31) 803.
rot, notes, (40) 844.
- Irises**, treatise, (26) 841; (28) 743.
- Irish**—
Agricultural Organization Society, report, (33) 593.
Milk Commission, report, (30) 679.
- Iron**—see also *Ferric and Ferrous*.
agricultural study, (40) 726.
and aluminum, separation, (33) 313.
and manganese, antagonism between, (33) 30.
and manganese, antagonistic action on wheat (36) 731.
arsenate, insecticidal value, (34) 60.
as antidote for cotton-seed meal poisoning, (29) 477; (34) 79; (38) 282, 370.
as growth stimulant for hemp, (33) 432.
assimilation by—
 plants, (36) 633.
 rice, (36) 431; (38) 728.
behavior during meat digestion, (28) 665.
chlorid, effect on activity of malt diastase, (29) 528.
colloidal, assimilation by rice, (32) 427.
compounds, inorganic, in chloroplasts of plants, (33) 627.

Iron—Continued.

- compounds, solubility in soils, (34) 720.
- concentration in subsoil, (31) 720.
- content of cow's milk, (27) 412.
- content of urine, (27) 870.
- corrugated, in irrigation construction, (31) 90.
- deposition on mycelium of aquatic fungi, (26) 825.
- detection in cheese curd, (26) 315; (27) 811.
- detection in dairy salt, (27) 811.
- determination, (27) 409.
- determination in—
 - blood, (39) 507.
 - cane and beet sugar factory products, (29) 613.
 - foods, (29) 809.
 - milk, (26) 314; (27) 411; (28) 611, 808; (33) 875.
 - mineral phosphates, (34) 112.
 - organic substances, (31) 809.
 - plant substances, (33) 502.
 - plants, (29) 797.
 - soil, (33) 814.
 - water, (26) 709; (31) 502; (32) 504.
- effect on—
 - action of calcium cyanamid, (27) 500.
 - Aspergillus fumigatus*, (29) 30.
 - Aspergillus niger*, (30) 824.
 - chlorosis in plants, (29) 828.
 - color of apples, (28) 145.
 - concrete sand, (34) 787.
 - development of barley, (30) 728.
 - growth of molds, (27) 228.
 - growth of tubercle bacilli, (29) 381.
 - legume bacteria, (29) 733.
 - permeability (34) 34.
 - plants, (36) 520; (35) 727.
- ferrous, in soils, (30) 719.
- filings, effect on tomatoes, (29) 339.
- galvanized, for farm buildings, (28) 188.
- hematoid, compounds in plants, (35) 634.
- immobility in plants, (36) 123; (38) 728.
- in Florida soils, (32) 819.
- in soils, solubility, (39) 821.
- in tomatoes, (32) 762.
- movement in podzol soils, (30) 216.
- ore beds, formation, (26) 326; (27) 527.
- ore deposits in Virginia coastal plain, (29) 513.
- ore waste, fertilizing value, (28) 816.
- oxid, distribution in loam soils, (31) 618.
- oxid, effect on action of cyanamid, (28) 33.
- oxid, effect on germination of seeds, (29) 528.
- pan, formation in soils, (30) 719.
- phosphate as affected by calcium carbonate, (26) 527.
- phosphate, fertilizing value, (26) 428, 622; (31) 823.
- phosphate, solubility and availability, (37) 324.
- precipitating in presence of organic matter, (31) 417.
- precipitation by light and plants, (26) 326.
- pyrites, fertilizing value, (30) 627.
- relation to—
 - chlorosis, (33) 522.
 - conidia of *Aspergillus niger*, (26) 431.
 - grape chlorosis, (26) 344.
- removal from water supplies, (29) 617.
- rôle in biological oxidation, (28) 864.
- salts, action on plants, (39) 630.
- salts, compounds of, (28) 864.
- salts, detection in wood, (26) 242.
- salts, effect on—
 - ammonification and nitrification in soils, (31) 120.
 - catalase, (25) 504.
 - ferments, (29) 309.
 - nitric-nitrogen accumulation, (4,) 722.
 - solubility of phosphates, (37) 323.
 - toxicity of cottonseed meal, (29) 477; (34) 79; (38) 232, 370.
- salts—
 - reaction in presence of proteins, (28) 410.
 - toxicity in soil, (36) 515.
 - toxicity towards clover, (33) 328.
- separation from aluminum, (38) 10.
- solubility in soils, (38) 727.
- solution and precipitation in soils, (30) 718.
- sprays, effect on forage crops grown on manganese soils, (38) 829.

Iron—Continued.

- sulphate, destruction of—
 - dandelions by, (31) 835.
 - horsetail by, (31) 741.
 - moss by, (31) 836.
 - weeds by, (26) 333, 839; (28) 838; (31) 532; (34) 228; (35) 340.
 - wild mustard by, (27) 536; (31) 44, 133, 739.
- sulphate—
 - effect on plant growth, (35) 434.
 - effect on yield of beans, (34) 528.
 - fertilizing value, (26) 536; (30) 326; (31) 31; (33) 841.
 - for cottonseed meal-fed pigs, (31) 578; (36) 471.
 - injection into trees, (32) 754.
 - preparation and use, (40) 748.
 - use against fly larvae, (34) 160.
 - use against grape chlorosis, (27) 850.
 - use against grape white rot, (30) 543.
 - use against plant rusts, (27) 47.
 - use in orchards, (33) 857.
- sulphid, effect on assimilation of rock phosphate, (29) 419.
- sulphid, fungicidal value, (37) 48.
- welding, (29) 593.
- Ironweeds, analyses, (29) 320.
- Ironwood—
 - as lignum vitae substitute, (40) 640.
 - black, fungus disease, (40) 160.
- Irpex flavus*, notes, (28) 241; (31) 152.
- Irrigation—
 - address on, (26) 788.
 - alkali distribution by, (40) 719.
 - amount and frequency, (27) 87, 385.
 - and land settlement in Western States, (35) 885.
 - automatic, for truck gardens, (25) 382.
 - bibliography, (31) 287; (32) 588.
 - border experiments, (40) 484.
 - border, slope of land in, (32) 586.
 - by borders or sloping checks, (38) 487.
 - gravity, (26) 788.
 - lateral percolation, (30) 486.
 - pumping, handbook, (28) 889.
 - pumping in western Kansas, (29) 121, 181.
 - underground pipe, (39) 590.
 - "zaalids," (31) 782.
- canals—
 - and laterals, plaster lining, (33) 886.
 - cleaning, (37) 285.
 - concrete-lined, construction, (35) 186, 490, 491.
 - concrete-lined, enlarging, (34) 388.
 - concrete lining for, (27) 890; (32) 380, 481.
 - construction of curves, (27) 788.
 - excavating with electrically driven draglines
 - scrapers, (34) 885.
 - flow of water in, (33) 183; (35) 185.
 - gate structures for, (31) 782.
 - leakage, prevention, (37) 487.
 - lining, (27) 890; (37) 281.
 - metal flumes for, (30) 588.
 - plant growth in, (37) 281, 285.
 - plaster lining, (33) 886.
 - seepage losses, (33) 885, 886; (36) 585.
 - silt problem in, (32) 882.
 - transmission losses in, (34) 387.
 - use of current meters in, (34) 281.
- centrifugal pumps for, (28) 890; (31) 588.
- computations, definitions and equivalents, (29) 186.
- concrete in, (32) 787.
- concrete pipe for, (36) 583.
- concrete pressure pipe line for, (28) 484.
- convoluted tube wells for, (29) 485.
- cooperation in, (27) 883.
- Deschutes project, (33) 880.
- development in United States, (26) 684.
- distribution systems, (37) 185.
- ditches, curves for velocity and discharge, (35) 787.
- ditches, determination of center, (31) 588.
- ditches, pasturing sheep on, (40) 472.
- drilling wells for, (32) 882.
- economic advisability, (37) 184.
- effect on—
 - action of fertilizers, (26) 522.
 - alkali soils, (26) 224; (28) 319; (34) 16.

Irrigation—Continued.
effect on—continued.

- apples, (26) 336; (27) 10.
- burning quality of tobacco, (38) 239.
- composition of alfalfa hay, (29) 139.
- composition of fruits, (29) 236.
- composition of potatoes, (29) 425.
- composition of sugar beets, (29) 226.
- corn, (31) 423.
- nitrification in soils, (31) 119.
- plant succession, (35) 732.
- protein content of wheat, (30) 836.
- quality of wheat, (35) 833.
- salts and nitrates in soils, (36) 816.
- soil bacteria, (31) 24.
- soil moisture, (38) 320.
- water level in soils, (35) 813.
- water table in Egypt, (32) 123.
- electric pumps for, (27) 453; (34) 86.
- electricity in, (33) 584, 589.
- engineering—
 - handbook, (33) 585; (37) 584.
 - papers on, (37) 281.
 - principles in, (30) 786.
 - treatise, (29) 683; (30) 587, 689.
- evaporation losses in, (27) 121.
- experiment station at Buenos Aires, (27) 188.
- experiments, *see also special crops*.
- experiments, (28) 532; (29) 31, 32, 138, 139, 181, 226, 484; (30) 34, 441; (31) 36; (32) 36, 224, 279, 827; (33) 390, 827; (40) 330.
- experiments—
 - at Bromberg, (31) 732.
 - at Rochester, New York, (33) 683.
 - in Arizona, (27) 529.
 - Austria, (30) 886.
 - Bromberg, (33) 683.
 - eastern Oregon, (32) 131.
 - India, (28) 588, 828.
 - Madagascar, (32) 187.
 - Nebraska, (28) 527.
 - Prussia, (27) 531; (29) 426.
 - western Oregon, (32) 185.
 - on light sandy soil, (33) 286.
- fall, (37) 822.
- farming—
 - factors in, (38) 391.
 - in Utah Valley, (40) 383.
 - outlook, (27) 585.
 - treatise, (30) 587.
- field laboratory at Denver, Colorado, (36) 583.
- flumes, concrete, construction, (38) 589.
- flumes, light-iron, notes, (30) 188.
- from a salt lake in Algeria, (27) 87.
- ground water in Big Smoky Valley, Nevada, (33) 778.
- reservoirs in western Kansas and Oklahoma, (30) 286.
- tube-wells, (31) 888.
- frost protection by, (32) 614.
- handbook, (27) 686; (29) 289.
- hydraulic laboratory at Fort Collins, Colorado (30) 287.
- in Abyssinia, (30) 434.
- Algiers, (37) 384.
- America, (32) 481; (34) 482.
- Anam, French Indo China, (36) 89.
- Argentina, (26) 188; (28) 399; (37) 183.
- Australia, (28) 484; (31) 88, 185; (32) 399; (37) 184.
- Bengal, (27) 291; (29) 486; (31) 684; (34) 586; (35) 580; (37) 484.
- Bihar and Orissa, (32) 84; (34) 85.
- Bombay, (27) 586; (35) 578.
- British Columbia, (28) 484; (30) 287; (35) 385; (38) 288.
- California, (27) 483, 686; (29) 386, 588; (30) 599; (34) 682; (35) 82, 284; (37) 486, 685.
- Canada, (26) 744; (29) 84; (31) 888; (35) 82, 684; (36) 682.
- Cape of Good Hope, (27) 788.
- Catalonia and Aragon, (29) 182.
- Chula Vista district, California, (39) 591.
- Colorado, (27) 291; (36) 582.
- Colorado River Delta, (33) 484.
- Crooked River basin, (35) 385.
- Dutch East Indies, (34) 884.
- Dutch India, (31) 288.
- Egypt, (27) 188; (29) 784, 816; (35) 794, 886; (37) 693.

Irrigation—Continued.
in Florida, (36) 784.

- Germany, (32) 385.
- humid regions, (27) 585.
- Ica Valley, Peru, (30) 486.
- Idaho, (28) 890; (33) 583.
- Iloos Norte, (32) 481.
- India, (27) 885; (28) 186, 736; (29) 683; (30) 187, 587, 588; (32) 481, 615; (33) 683; (37) 184, 585, 693; (38) 84, 186.
- Indo China, (33) 391.
- Italy, (33) 584; (34) 786; (35) 580; (37) 183.
- Jaunpur District, (34) 786.
- Java and Madoera, (33) 391.
- Java, British India, and Indo China, (31) 89.
- John Day River valley, Oregon, (36) 283.
- Kansas, (27) 788; (34) 785.
- Libia, (37) 184.
- Luzon, (26) 892.
- Mauritius, (35) 580.
- Modesto and Turlock districts, California, (30) 287.
- Montana, (27) 385; (31) 684; (32) 882; (36) 486.
- Morgan Hill area, California, (36) 885.
- Navajo and Hopi Indian reservations, (36) 485.
- Nebraska, (26) 892; (29) 289; (33) 888.
- Nevada, (31) 588.
- New Mexico, (26) 892; (38) 689.
- New South Wales, (26) 892; (27) 188; (33) 583, 889; (34) 785; (37) 585.
- North Dakota, (26) 892; (29) 182.
- Novouzensk district, (37) 882.
- Oregon, (29) 486; (31) 88; (33) 888, 889; (36) 485.
- Oregon, Malheur and Owyhee projects, (36) 583.
- Papago Indian Reservation, Arizona, (29) 889.
- Pit River basin, (35) 285.
- Porto Rico, (29) 182, 889; (33) 485.
- Queensland, (27) 686.
- Rhodesia, (31) 588; (33) 885.
- Rogue and Willamette river valleys, (36) 282.
- Russian Turkestan, (31) 812.
- Sacramento Valley, California, (33) 186, 780.
- San Joaquin Valley, California, (35) 186.
- San Luis Valley, (34) 527.
- Santa Cruz Valley, Arizona, (30) 187.
- Siegerland, (29) 589.
- Sierra Nevada foothills, (33) 286.
- Silver Lake region, Oregon, (35) 285.
- Sind, (27) 889.
- Snake River Basin, (32) 279.
- South Africa, (27) 686; (30) 787.
- South Australia, (27) 586; (31) 883.
- South Carolina, (27) 189.
- southeast Russia, (33) 884.
- Spain, (33) 485; (37) 183.
- Sudan, (29) 784.
- Texas, (33) 788; (34) 282.
- the Great Plains, (32) 384.
- Tularosa basin, New Mexico, (32) 785.
- Tunis, (31) 287, 492.
- Turkestan, (36) 886.
- Union of South Africa, (31) 492.
- United States, (26) 292; (28) 888; (30) 692; (31) 588; (37) 183.
- United States, treatise, (34) 784; (38) 389.
- Utah, (29) 722; (31) 88.
- Valais Canton, Switzerland, (34) 85.
- Vermont, (32) 587.
- vicinity of Enid, Oklahoma, (32) 383.
- vicinity of Wichita, Kansas, (31) 88.
- Victoria, (28) 683; (30) 887; (31) 296; (34) 682.
- Washington State, (35) 885.
- western Australia, (30) 587; (35) 489.
- western Canada, (33) 780.
- western Nebraska, (31) 328.
- Western States, (31) 888; (33) 885.
- Wyoming, (27) 385; (29) 84; (33) 390, 583.
- information for beginners, (38) 186.
- investigations, (27) 585, 819; (28) 130, 132, 134, 229, 332; (30) 786; (32) 586; (33) 87; (34) 282; (39) 792.
- laterals, concrete lining for, (35) 491.
- law in Oregon, (31) 587.
- law of minimum in, (32) 481.
- law, textbook, (35) 185.
- law, treatise, (31) 586.

Irrigation—Continued.

- laws in—
 - California, (35) 885.
 - Canada, (35) 885.
 - Idaho, (36) 354.
 - Kansas, (28) 496.
 - Nebraska, (27) 291; (30) 486.
 - New Mexico, (30) 486; (33) 682.
 - Washington, (37) 693.
 - Wyoming, (30) 486.
- lystmeter investigations, (40) 432.
- machine, in southeast Russia, (33) 884.
- modern methods, (27) 889.
- municipal, from Los Angeles aqueduct, (33) 485.
- near Oklahoma City, Oklahoma, (32) 384.
- neighborhood cooperative system, (26) 892.
- notes, (28) 889; (29) 88, 540; (31) 383, 494, 782; (32) 333.
- of alfalfa pastures, (38) 68.
- citrus orchards, (33) 779.
- fruit, insufficient and excessive, (39) 241.
- gardens, possibilities, (28) 785.
- grain crops, (38) 186.
- orchards, studies, (27) 743.
- rice, (33) 337.
- overhead—
 - for frosted cranberries, (31) 740.
 - in citrus groves, (27) 788.
 - notes, (38) 788.
 - tests, (36) 583, 640.
- pamphlet, (29) 181.
- papers on, (31) 88.
- plants, consumption of electric energy by, (36) 184.
- plants, small, erection and operation, (31) 888.
- practice and engineering, treatise, (34) 481, 482.
- private v. government, (27) 483; (30) 887.
- problems, notes, (27) 789.
- project—
 - electrical, notes, (28) 289.
 - in Milk River, Mont., cost data, (36) 89.
 - Orange Free State, (29) 487.
 - Oregon, (27) 414; (34) 85.
 - South Africa, (31) 418.
 - Washington, (29) 486.
 - on Colorado River, (26) 214.
- projects—
 - accounting for, (35) 284, 385.
 - corrugated iron construction in, (31) 90.
 - diverting dams and gates for, (31) 89.
 - in Russia, (34) 85.
 - pumping on, (40) 188.
 - snow surveys in, (27) 510.
 - use of water on, (40) 187.
- public, financing, (26) 685.
- pumping—
 - cost, (33) 87; (36) 88.
 - cost in Nebraska, (38) 187.
 - electric power for, (27) 889; (35) 386.
 - for, (31) 587, 588; (35) 787; (37) 185, 585.
 - in Pacific coast States, (33) 884.
 - notes, (27) 788.
 - plant, description, (27) 385.
 - plants for, (28) 83, 84; (29) 784; (30) 385, 485, 587; (37) 384; (38) 186.
 - plants, tests, (36) 487, 888; (37) 283; (38) 590; (39) 792.
 - power and rates, (37) 786.
 - treatise, (33) 884.
- pumps—
 - for, (34) 482.
 - kerosene motor for, (27) 290.
 - selection, (35) 887.
 - small v. large, (28) 186.
 - tests, (35) 580.
- regulation and conservation in United States, (27) 188.
- relation to—
 - alkali accumulation, (33) 419.
 - apple bitter pit, (36) 50.
 - apple spot diseases, (38) 753.
 - rainfall, (28) 316.
 - snowfall, (29) 813.
 - soil bacteria, (37) 86.
 - soil permeability, (32) 586; (38) 788.
- requirements of Yuma project, (40) 484.
- reservoirs, evaporation and seepage from, (34) 387.
- reservoirs, unlined, (37) 585.

Irrigation—Continued.

- scheme, Gezira, in Sudan, (40) 791.
- seepage and return waters, (38) 288.
- seepage water, ownership and disposal, (33) 486.
- seepage waters from, (28) 83.
- spray, (30) 887; (37) 693.
- spray system, description, (30) 486, 587.
- stand pipes, construction and operation, (30) 889.
- structures, design, (39) 288.
- structures, use of cement in, (37) 787.
- structures, wood v. concrete for, (35) 491.
- sun-power plant for, (31) 688.
- supplementary, in dry farming, (29) 735.
- surface, in eastern United States, (38) 788.
- surface, v. subirrigation for vegetables, (29) 638.
- systems—
 - loss of water in, (31) 782.
 - maintenance, (34) 482.
 - management, (31) 89.
 - notes, (27) 290.
 - operation and maintenance, (38) 589.
 - seepage losses from, (29) 181, 289.
 - tracts, surveying and laying out, (31) 486.
 - treatise, (31) 383; (32) 784; (33) 389, 585, 586, 884; (35) 185, 491; (37) 185, 584, 587.
 - tunnel in Colorado, (26) 892.
 - under Carey Act, (40) 786.
 - upland, notes, (26) 130.
 - use of sea water for, (33) 392.
 - use of sewage in, (26) 716.
 - use of small waterfalls for, (36) 89.
 - use of windmills in, (29) 891.
 - Valier-Montana project, (33) 485.
 - waste of water in, (27) 290.
- water—*see also* Water.
 - capacities of soils for, (39) 213.
 - duty of, *see* Water, duty of.
 - rights legislation, (40) 483.
 - use, (40) 333.
 - wheel for, (36) 185.
- weir, description and tests, (35) 81.
- windmills for, (38) 186.
- with saline waters, (39) 792.
- with sewage, (27) 318; (36) 183.
- with silt-carrying water, (34) 513.
- wood stave pipe in, (29) 84.
- wooden flumes for, (36) 586.
- work, classification of expenditures for, (35) 284, 385.
- work, conversion table and diagram for, (27) 87.
- work, slope-stake tables in, (27) 385.
- works, hydraulic and excavation tables for, (35) 490.
- works, operation, (33) 683.
- works, treatise, (26) 787, 788.
- Irritability in plants, studies, (29) 421.
- Isachne spp.—
 - descriptions and analyses, (31) 431.
 - of Java, (35) 440.
- Isaria—
 - arachnophila, notes, (40) 459.
 - densa, notes, (28) 354.
 - farinosa, parasitic on larch sawfly, (26) 63.
 - fungus, use against black scale, (33) 858.
 - psychidae n.s.p., investigations, (29) 46.
 - psychidae, studies, (27) 758.
 - sp., on root weevil larvae, (36) 153.
 - sp., studies, (27) 565.
 - spp., descriptions, (33) 459.
- Isatis tinctoria—
 - carotinoid content, (31) 803.
 - stomatal movement in, (26) 627.
- Ischaemum laxum, analyses, (28) 768.
- Ischaemum spp., notes, (26) 361.
- Ischnodemus fallicus, notes, (35) 657.
- Iseilema, Indian species, (39) 234.
- Iseilema laxum, analyses, (28) 768.
- Isobutyric acid, occurrence in silage, (28) 608.
- Isocollibacillosis in calves, (39) 686.
- Isodromus abnormicornis n.s.p., description, (36) 556.
- Isodromus iceryae, notes, (31) 757.
- Isotes lacustris, parasite of, (40) 249.
- Isoguvacin, chemical formula for, (31) 309.
- Isoleucylvalin anhydride, structure, (40) 611.
- Isometopidae of North America, (38) 560.
- Isopoda, terrestrial, check-list, (40) 547.
- Isopods, terrestrial, parasite of, (39) 563.
- Isoprene from β -pinene, (34) 502.

- Isopyrum** spp., hydrocyanic acid in, (39) 27.
- Isosoma**—
 grande, notes, (35) 58; (36) 59.
 injurious to grain crops in Russia, (33) 563.
- orchidearum**—
 life history and remedies, (32) 453.
 notes, (28) 854; (36) 252.
 studies, (38) 660.
 spp., remedies, (37) 263.
 vaginicum n.s.p., description, (36) 59.
- Isothermal** region, height and temperature of, (26) 118.
- Isofomurus palustris maculatus**, notes, (28) 654.
- Italian Colonial Agricultural Institute at Florence**, (35) 695.
- Italian** dishes, recipes, (38) 662.
- Itinerant instruction in animal husbandry**, (28) 92.
- Itionida**—
 anthici n.s.p., notes, (29) 357.
 catalpae, *see* Catalpa midge.
 inopis, notes, (29) 656.
 opuntiae, notes, (33) 252.
 tritici n.s.p., description, (28) 657.
- Itionidae**, feeding habits, (26) 860.
- Itionididae**—
 of Germany, (31) 158.
 of New York, (34) 752.
 studies, (28) 455.
 zoophagous, list, (33) 255.
- Itoplectis**—
 conquisitor—
 feeding habits, (29) 261.
 notes, (28) 755; (31) 752.
 parasitic on bud moth, (34) 250.
 masculator, notes, (27) 562.
 obesus n.s.p., description, (38) 565.
- Ittys perditrix** n.s.p., description, (40) 760.
- Iva xanthifolia**, analyses, (34) 39.
- Ives tint photometer**, description, (36) 207.
- Ives tint photometer**, use, (37) 110.
- Ivory**—
 nut meal, analyses, (38) 369.
 vegetable, as a coffee adulterant, (28) 862.
 vegetable, notes, (30) 46.
 vegetable, studies, (33) 845.
- Ivy**—
 ground, poisoning of horses by, (32) 278.
 injurious effects on trees, (35) 636.
 Japanese, Cladosporium disease of, (31) 347, 844.
 scale, notes, (29) 654.
 scale on olive, (38) 157.
 volatile poison of, (31) 280.
- Ixia maculata**, bacteriosis of, (29) 844.
- Ixodes**—
 angustus, life history, (30) 60; (31) 79.
 holocyclus, destruction, (36) 678.
 holocyclus, notes, (31) 679.
 n.s.p., descriptions, (27) 460.
 putus, description of larval stage, (27) 361.
 ricinus, notes, (28) 82; (40) 585, 587.
 ricinus, occurrence in New Zealand, (26) 460.
 ricinus, relation to louping-ill, (40) 384.
 spp., notes, (27) 865; (29) 58.
- Ixodidae**—
 biology, (29) 58; (34) 857.
 North American, notes, (27) 460.
 of Argentina, (38) 468.
 of Brazil, (27) 361.
- Ixodiphagus caucurtei**, notes, (27) 564; (30) 255.
- Ixodoidea**, monograph and bibliography, (35) 263.
- Jaboticaba**, description, (31) 536.
- Jack bean borer**, notes, (33) 555.
- Jack beans**—
 as cover crop (33) 535; (34) 736.
 as green manure, (37) 320.
 composition and digestibility, (33) 267.
 culture, (30) 335; (32) 226.
 culture experiments, (28) 136; (35) 528; (37) 729; (38) 827.
 culture in Guam, (40) 328.
 digestibility and productive value, (37) 865.
 globulins of, (40) 308.
 injurious to pineapples, (33) 535.
 insects affecting, (27) 155.
 notes, (28) 838; (31) 336.
 proteins of, (37) 8.
 urease content, (35) 612.
 varieties, (30) 828.
 yields, (39) 434.
- Jack cheese**, manufacture, (40) 576.
- Jack fruit**, analyses, (32) 761.
- Jackals**, relation to canine piroplasmosis, (28) 83.
- Jacks**—
 advertising in Indiana, (31) 75.
 breeding in United States, (39) 74.
 care and management, (30) 772.
 in Indiana, (37) 169; (39) 73.
 Oklahoma, (37) 169; (40) 76.
 Utah, (37) 681; (39) 73; (40) 473.
 Wisconsin, (34) 470; (36) 473.
 licensed, distribution, (26) 168.
 licensed in Utah, (31) 471.
 public service, in Wisconsin, (38) 275.
 pure-bred, in Montana, (36) 470.
 registration, (32) 771.
- Jaegers**, North American, distribution and migration, (34) 158.
- Jagzlekte** in sheep, studies, (33) 384.
- Jalalia**, culture experiments, (27) 336.
- Jalysus spinosus**, notes, (32) 753; (35) 657.
- Jams**—
 adulteration, (29) 60.
 analyses and adulteration, (33) 461.
 examination, (28) 166; (30) 258.
 preparation, (31) 315; (32) 253.
- Jand forests of Punjab**, (34) 46.
- Janus abbreviatus**, notes, (37) 255.
- Janus luteipes** injurious to osiers, (33) 659.
- Japan** current and climate of California, (31) 213.
- Japanese**—
 beetle, *see* Popillia japonica.
 beetle fungus, propagation, (29) 652.
 boiled oil, analyses, (28) 493.
 cane, *see* Sugar cane.
 diet of, (26) 763.
- Jasmine**, yellow, poisoning of cattle, by (34) 80.
- Jassidae**—
 hymenopterous parasites of, (34) 557.
 North American, distribution and ecology, (27) 656.
- Jassidophthora n.g. and n.spp.**, descriptions, (27) 554.
- Jassoidea** of—
 central Mississippi Valley States, (35) 853.
 Maine, (33) 356.
 Missouri, (35) 463; (37) 157.
 North America, key, (30) 754.
 Tennessee, (36) 654.
- Jassus sexnotatus** attacking rye, (34) 754.
- Jatropha curcas**, poisonous substances in seeds, (31) 775.
- Jaundice**—
 infectious, *see* Spirochaeta icterohaemorrhagiae.
 malignant, *see* Piroplasmosis, canine.
- Java Sugar Station**, report, (26) 610.
- Javelle water**—
 in treatment of wounds, (38) 585.
 toxicity, (39) 586.
- Jay**, California blue, destructive to almonds, (29) 52.
- Jeffrey pine beetle**, notes, (26) 561.
- Jellies**—
 adulteration, detection, (27) 806.
 detection of added acids in, (32) 162.
 examination, (28) 166; (32) 162.
 examination methods, (39) 611, 612.
- Jelly**—
 making, (29) 798; (35) 418; (37) 715; (39) 571, 806; (40) 414.
 making, pectin test, (40) 558.
 making, principles, (27) 463; (31) 299.
 making with sugar savers, (40) 558.
 pectins forming, (40) 202.
 plant, culture experiments, (31) 441.
 powders, examination, (30) 664.
 preparation, (31) 315; (32) 253; (35) 419; (38) 114.
 preparation and judging, (30) 259.
 preparation from citrus fruits, (35) 113.
- Jennets**, care and management, (30) 772.
- Jerusalem corn**—
 culture experiments, (28) 532.
 drought resistance of, (28) 633.
- Jewish Agricultural and Industrial Aid Society**, (28) 688; (30) 693; (32) 893; (36) 894; (39) 89.
- Jimson weed** early blight, notes, (38) 451.
- Jimson weed**, notes, (30) 145.
- Jinja**, transmission by blood-sucking insects, (26) 150.
- Job's tears**, notes, (26) 361.
- Job's tears**, variety used as food, (40) 658.

Johns's—

bacillus—

- biology of, (31) 283.
- caseation of tissues by, (33) 480.
- culture, (27) 482; (28) 481.
- pathogenicity, (29) 285.
- specific agglutination and amboceptor for, (28) 179.
- studies, (26) 783.

disease—

- and avian tuberculosis, relationship, (28) 476.
- animals susceptible to, (29) 285.
- complement-fixing antibodies in, (31) 882.
- control in England, (36) 275.
- diagnosis, (28) 179, 481.
- in sheep, studies, (29) 81.
- notes, (28) 181; (33) 180; (34) 184, 575; (39) 81, 582, 589.
- occurrence and transmission, (36) 382.
- pathological anatomy, (29) 284.
- studies, (26) 380; (28) 81, 82; (37) 479; (38) 282.
- treatise, (32) 273.
- treatment, (29) 587; (31) 283; (35) 76.

Johnson grass—

- analyses, (30) 565.
- and Sudan grass seeds, distinguishing characters, (35) 834; (37) 236.
- as forage crop, (31) 829.
- botanical notes and culture, (35) 640.
- chloroform extract of, (31) 71.
- culture experiments, (34) 227.
- destruction, (27) 536.
- eradication, (34) 227, 735; (37) 529; (38) 634; (39) 37, 736.
- feeding value, (29) 869.
- germination, (40) 222.
- grades of, (34) 528.
- hay, composition, (27) 668.
- hay, digestibility, (27) 669; (37) 168.
- hay, mineral constituents, digestibility, (40) 769.
- root system, (36) 438.
- seed, resistance to desiccation, (40) 39.
- silage from, (39) 272.

Johnson, S. W., letters and papers of, (30) 2, 94.

Joint-ill—

- in foals, (28) 82, 184; (36) 581, 582; (39) 891.
- mixed infection vaccine in, (33) 879.
- treatment, (40) 181.

Joints—

- nonspecific inflammations of, (36) 676.
- timber, tests, (31) 488.

Jolly bodies in erythrocytes of mammals, (29) 478.

Jorhat experiment station, report, (33) 227.

Journal of Agricultural Research—

- editorial on, (31) 601.
- preparation of articles for, (32) 796.

Jowar—

- analyses, (38) 572.
- culture experiments, (39) 229.
- pollination and cross-fertilization, (38) 435.
- seed position in planting, (40) 635.
- smuts, notes, (38) 548.
- sweet, as source of sugar, (32) 136.

Juglans—

- californica quercina—
- description, (30) 644.
- mutation in, (34) 236.
- origin, (32) 46.

- nigra, development of fat in, (30) 411.
- regia as a food adulterant, (26) 868.
- regia, utilization of wood, (28) 544.

Juglone, detection in walnuts, (30) 412.

Juice heaters, vacuum, studies, (36) 387.

Jujubes—

- culture in China, (38) 446.
- culture in southern Texas, (32) 539.

Julus hortensis, notes, (28) 554.

Junco hyemalis—

- coccidiosis in, (26) 187.
- destruction of grain aphids by, (29) 453.

Juncus—

- balticus, analyses, (29) 270.
- balticus, digestibility, (32) 770.
- effusus as a litter for cows, (35) 175.

June beetle—see also *Lachnosterna* and *Phyllophaga*.

- bacterial disease of, (32) 61.
- green, notes, (33) 57.

June beetle—Continued.

- green, remedies, (35) 551.
- notes, (28) 158; (30) 656; (33) 252; (34) 752.
- western lined, notes, (32) 556.

June bugs—

- analyses and feeding value, (38) 72.
- green, notes, (29) 453.

June grass, sulphur in, (31) 817.

Juniper—

- alligator, germination of seed, (29) 544.
- as affected by mistletoe, (31) 540.
- bug notes, (30) 657.
- Chinese, rust, notes, (29) 547.
- gall, description, (37) 253.
- plant bug, notes, (34) 752.
- rots, notes, (27) 253.
- rust, notes, (31) 641.
- scale, notes, (30) 154.
- Utah, notes, (27) 347.
- webworm, notes, (28) 554; (35) 54.
- webworm, occurrence in New York, (20) 146.
- witches' broom affecting, (31) 56.

Junipers—

- Himalayan, wood structure, (33) 645.
- insects affecting, (34) 450.
- list, (35) 44.
- of Rocky Mountain region, (33) 343.

Juniperus—

- communis, notes, (30) 145.
- utahensis, notes, (27) 347.
- virginiana, bark rusts of, (30) 544.
- virginiana, culture in Germany, (30) 646.

Jupiter, surface currents, (36) 719; (38) 510.

Jute—

- and its substitutes, (34) 227.
- as green manure, (27) 337.
- breeding experiments, (38) 526.
- culture experiments, (26) 233; (27) 638; (30) 525; (38) 336, 526; (39) 230.
- culture in India, (28) 736.
- culture in India and Indo-China, (35) 736.
- culture in Purnea, (40) 238.
- fertilizer experiments, (27) 638; (29) 830; (33) 624; (35) 736; (39) 523.
- fiber, African, (39) 442.
- fiber, tests, (31) 526.
- fiber, water absorption capacity, (37) 736.
- improvement, (38) 637.
- Indian, analyses and valuation, (30) 138.
- inheritance of color in, (27) 428.
- insects affecting, (27) 54.
- leaf spot disease, (36) 348.
- Rhizoctonia diseases, (30) 845; (40) 48, 347.
- root rot, notes, (29) 445.
- sclerotal diseases, notes, (38) 351.
- seed, raffinose in, (37) 710.
- self-fertilization in, (27) 428.
- substitutes, (38) 208; (39) 510.
- varieties, (27) 638; (28) 736; (30) 525; (37) 825.
- wastes, fertilizing value, (29) 129.

Kachess dam, Washington, construction, (29) 386.

Kafir—

- analyses, (27) 469; (31) 863; (34) 865; (36) 65.
- and corn, transpiration, (39) 440.
- and cowpeas, silage from, (28) 734.
- as dry-farm crop, (37) 329, 637; (39) 736.
- feeding stuff, (32) 68.
- grain crop, (29) 738.
- silage crop, (38) 630; (39) 33, 134; (40) 330.
- ash analyses, (29) 861.
- beans, culture under dry farming, (30) 435.
- beans, varieties, (30) 435.
- breeding experiments, (39) 736.
- chop, analyses, (26) 467; (28) 465; (34) 169, 467; (36) 765; (38) 369; (39) 370; (40) 571.
- chop, digestibility, (31) 863.
- covered kernel smut on, (39) 756.
- culture, (32) 226.
- culture and use, (32) 40.
- culture experiments, (27) 529; (28) 532; (29) 225, 426; (30) 632; (32) 526; (33) 32; (34) 630; (35) 829; (36) 131; (37) 132, 331, 730; (38) 631, 829, 831; (39) 129, 434; (40) 32, 624.
- culture in—
- Arizona, (32) 226.
- Guam, (40) 327.
- Montana, (33) 526.
- southern Great Plains area, (33) 332.
- Texas Panhandle, (29) 429; (35) 440.
- depth of plowing tests, (40) 624.

Kafir—Continued.

- digestibility, (37) 678.
- digestibility and productive value, (37) 865.
- drought resistance of, (28) 633.
- dwarf, digestibility, (36) 660.
- fats and fatty acids of, (38) 410.
- feeding value, (39) 71, 174; (40) 75, 278.
- fertilizer experiments, (34) 421; (40) 624.
- flour bread, tests, (27) 63.
- fodder, chloroform extract of, (31) 71.
- fodder, composition, (27) 668.
- fodder, digestibility, (27) 669; (37) 163.
- from South Africa, analyses, (34) 530.
- grades of, (32) 138.
- grain smut, notes, (29) 547.
- graphic summary of seasonal work, (39) 495.
- growing with legumes, (40) 822.
- head chop, analyses, (31) 863.
- hydrocyanic acid in, (30) 584.
- improvement, (40) 737.
- inosite phosphoric acids of, (39) 14.
- kernel, physical and chemical study, (39) 164.
- leaves, variation of water and dry matter in, (37) 637.
- meal, analyses, (31) 863; (36) 765.
- melon, analyses, (32) 166.
- milling and baking tests, (40) 361.
- mineral constituents, digestibility, (40) 769.
- notes, (26) 362; (31) 333.
- nutritive value and use in the diet, (29) 864.
- orange, notes, (30) 145.
- score card for, (31) 832.
- seeding experiments, (38) 630; (40) 522.
- silage for calves, (39) 71.
- smut, description and treatment, (32) 146.
- starch content, (35) 103.
- use in bread making, (34) 67.
- varieties, (37) 338; (39) 33.
- varieties for central and southern Great Plains, (35) 832.
- varieties for silage, (39) 134.
- varieties for Texas, (39) 838.
- water requirements, (32) 335.
- weight of heads, relation to number of whorls, (40) 330.
- weight ratios, (36) 131.
- wilting coefficient, (32) 335.
- yields, (40) 330, 331.
- yields of stover, (40) 330.

Kafir—

- chemistry of, (37) 8.
- hydrolysis, (40) 110.
- nutritive properties, (38) 570.

Kaiga grass, microscopy of pulp, (27) 315.**Kainit**—

- composition, (27) 422; (28) 819.
- destruction of weeds by, (29) 215; (31) 532, 739; (32) 138; (35) 340; (36) 639; (37) 446.

effect on—

- coherence of soils, (31) 123.
- germination of salts, (29) 328.
- lime in soil, (33) 326.
- nitrogen fixation, (28) 816.
- resistance of grain to hail, (30) 519.
- soils, (30) 220.
- water conservation in soils, (33) 424.
- yield of cotton, (31) 136.
- fertilizing value, (26) 329, 330, 526, 537, 736; (27) 125, 429, 638, 725, 837; (28) 425, 832; (29) 126, 319, 335, 336; (30) 436, 636; (31) 226, 530, 820, 821, 829; (32) 630; (33) 432; (34) 22, 431; (38) 218, 816.

for asparagus, (28) 339.

- corn, (32) 732.
- cotton, (31) 40.
- meadows, (33) 330.
- moor soils, (39) 438.
- sweet potatoes, (33) 337.
- hygroscopicity, (35) 631.
- imports into United States, (31) 726.
- Kalusz, analyses, (33) 424.
- nitrogen absorption capacity, (28) 325.
- use against cotton rust, (32) 735.

Kaki, classification, (31) 639.**Kakivoria flavofasciata** on persimmon, (40) 52, 167.**Kakothrips pisivora**, notes, (37) 257.**Kakothrips robustus**, studies, (34) 450.**Kala-azar**—

- canine and human, relation, (32) 61.
- induced development of, (33) 862.
- monograph, (39) 683.
- notes, (27) 55.
- parasite, development, (28) 655.
- prevalence in India, (28) 655.
- studies, (37) 357.
- transmission by bedbugs, (26) 760.
- transmission by blood-sucking insects, (23) 159.
- Kalanchoe paniculata*, analyses and digestibility, (32) 167.

Kale—

- as forage crop, (39) 338.
- buda, as forage crop for sheep, (28) 267.
- coccinellids affecting, (33) 256.
- cooperative experiments, (29) 138.
- culture experiments, (32) 132; (36) 436.
- culture for forage, (33) 34, 632.
- culture for winter forage, (38) 735.
- fertilizer experiments, (26) 631; (30) 532; (32) 540; (35) 235; (36) 425.
- irrigation experiments, (32) 186.
- lightning injury to, (33) 149.
- marrow-stem, culture experiments, (36) 735.
- pollination experiments, (35) 342.
- Ragged Jack, notes, (27) 435.
- root-louse injury, (40) 60.
- sea, cooking, (31) 856.
- seed, growing, (40) 340.
- seed, home-grown, (38) 298.
- seed selection, (32) 827.
- seed, vitality, (27) 740.
- thousand-headed—
 - as forage crop, (38) 827.
 - culture, (27) 340; (32) 226.
 - culture experiments, (28) 531; (30) 632.
 - culture on muck soils, (33) 33.
 - v. marrow cabbage, (32) 827.
 - varieties, (29) 530; (31) 829.
- varieties, (26) 631, 835; (27) 32; (31) 829; (33) 33

Kaliofenusa ulmi, notes, (27) 658.**Kaliosysphinga**—

- dobrnii, notes, (32) 550.
- ulmi—see also *Kaliofenusa ulmi*.
- life history and remedies, (29) 557.
- notes, (28) 57, 351.

Kalmia latifolia, leaf blight of, (39) 253.**Kangaroo**—

- botfly, notes, (29) 761.
- grass, analyses, (27) 469; (30) 565.

Kanker-bosje, culture experiments, (30) 632.**Kanona tankage**, availability of nitrogen in, (35) 427.**Kansas**—**College**—

- alumni record, (32) 895.
- history and growth, (30) 297.
- notes, (26) 395; (27) 197, 697, 900; (28) 300, 396, 494, 696, 900; (29) 97, 497, 698; (30) 198, 600, 796; (31) 197, 398, 796; (32) 396, 599, 900; (33) 300, 794; (34) 295, 695, 900; (35) 96, 300, 798; (36) 196, 499, 694; (37) 196, 497, 700; (38) 96, 299, 498, 699; (39) 95, 500, 599, 695; (40) 98, 497, 600, 798.

Horse Breeders' Association, report, (29) 873.**State Good Roads Association**, report, (28) 786.

- Station, notes, (27) 197, 397, 600, 697; (28) 300, 494, 696, 900; (29) 97, 497, 698; (30) 198, 600, 796; (31) 197, 300, 496, 796; (32) 396; (33) 300, 794; (34) 295, 495, 695, 900; (35) 300, 798; (36) 196, 499, 694; (37) 196, 299, 497; (38) 96, 299, 498, 699; (39) 500, 695; (40) 98, 497, 798.

Station, report, (34) 693; (36) 195; (38) 697; (40) 397.**Kanten**, chemical studies of algae used in, (40) 110.**Kaoliang**—

- analyses, (33) 361.
- as table food, (33) 361.
- covered kernel smut on, (39) 756.
- culture experiments, (29) 424; (32) 526; (33) 333; (36) 34; (40) 433.
- culture in Texas, (39) 838.
- culture in Texas Panhandle, (29) 430.
- description and culture, (32) 736.
- drought resistance of, (28) 633.
- feeding value, (39) 71.

- Kaoliang**—Continued.
for pigs, (33) 380.
grain, digestibility, (36) 661.
notes, (28) 534.
starch content, (33) 108.
varieties, (37) 338.
- Kaolin**—
adsorption in, (31) 814.
determination of absorptive power, (31) 514.
effect on linseed oil, (28) 714.
- Kaong**, culture and use, (32) 46.
- Kapok**—
culture experiments, (30) 434.
culture in German colonies, (31) 136.
fiber, examination, (39) 442.
fiber, use, (31) 736.
industry, notes, (30) 233.
insects affecting, (26) 354.
notes, (26) 835; (30) 735; (31) 736.
seed meal for cattle and pigs, (30) 868.
seed oil, hydrogenated, properties of, (34) 9.
trees of Togo, (30) 46.
- Karanj** cake, fertilizing value, (26) 631.
- Karite**, insects affecting, (28) 555.
- Karut**, analyses, (27) 268.
- Kastle**, J. H., biographical sketch, (35) 596.
- Katabolism**, basal, studies, (39) 270.
- Katathermometer**, description, (33) 367.
- Katmai** dust cloud, duration, (30) 417.
- Katmai** volcano eruption, effect on atmospheric transparency, (29) 121.
- Katyids** injurious to oranges, (33) 451.
- Katyk**, microorganisms of, (26) 779.
- Kedani** disease, carrier, (37) 858.
- Keene** forest, description, (36) 243.
- Kefir**—
analyses, (26) 171.
and kefir whey, (40) 379.
bacteriological characteristics, (31) 772.
bibliography, (27) 75.
food value, (33) 78.
method of analysis, (31) 114.
preparation, (29) 475.
preparation and use, (27) 75; (34) 474.
- Keithia** thujina, studies, (36) 652.
- Kel** grass, analyses, (28) 768.
- Kelp**—
analyses, (30) 724; (31) 823; (33) 107.
as source of nitrogen, (33) 125, 206.
as source of potash, (27) 22, 23; (30) 27; (31) 321;
(32) 821; (33) 424, 819; (34) 821; (35) 327; (39)
204, 521; (40) 128.
California, organic constituents of, (33) 107.
chemistry of, (32) 723.
composition, (27) 421, 500.
decolorizing carbon from, (40) 12.
decomposition in soils, (35) 815.
destructive distillation, (34) 328.
distribution, (29) 322.
fertilizer, analyses, (34) 521.
fertilizing value, (29) 25.
flies of North America, (40) 263.
freshly cut, potash from, (29) 519.
green, fertilizing value, (34) 219.
industry in British Columbia, (39) 220.
industry in British Isles, (33) 25.
industry, notes, (27) 326.
industry on Pacific coast, (30) 27.
of Pacific coast, size, (34) 623.
physiological conditions in, (34) 429.
potash and other products from, (29) 128.
production in United Kingdom, (31) 519.
utilization, (26) 126, 526.
- Kemps**, studies, (26) 473.
- Kentia** macarthurii, leaf spot disease of, (36) 348.
- Kentucky**—
Station—
financial statement, (26) 598, 692.
list of publications, (31) 899.
notes, (26) 395, 600; (27) 397, 600, 697; (28) 600;
(29) 97, 397, 794; (30) 396, 600; (31) 695, 796;
(32) 396, 497; (33) 399, 900; (34) 96, 496; (35)
96, 596; (36) 397; (37) 398, 896; (38) 699, 900;
(39) 599, 695; (40) 98, 199, 497, 798.
report, (31) 396; (34) 694; (38) 697; (39) 499.
report of director, (26) 598, 692.
- University**, notes, (26) 395, 600; (27) 397, 600, 697;
(29) 397; (30) 396; (31) 398, 695, 796; (33) 399;
(34) 96, 496; (35) 397, 596; (37) 398, 497, 896; (38)
699; (39) 599, 695; (40) 98, 199, 497, 696, 798.
- Keratin**, tryptophan in, (28) 411.
- Keratitis**—
acute, notes, (26) 482.
infectiosa in cattle, (37) 691.
infectiosa in reindeer, (35) 488.
infectious, studies, (40) 585.
- Kermes**—
pubescens, chalcidoid parasites of, (26) 254.
sasserri, notes, (37) 255.
- Kerosene**—
adaptation to gasoline engines, (31) 187.
as fuel for internal combustion engines, (30) 892.
as substitute for gasoline, (32) 788.
as wood preservative, (32) 841.
carburetor, description, (31) 92; (38) 492.
carburetors for, (36) 288.
effect on corn, (32) 729.
emulsion, new, description, (36) 252.
engines, prevention of pounding in, (35) 585.
for farm tractors, (32) 857.
for internal combustion engines, (32) 687.
illuminating power, (32) 487; (34) 488.
lamps, tests, (27) 388.
larvicidal value, (37) 464.
motor, use in irrigation, (27) 290.
oil, detection, (28) 412.
power from, (29) 184.
toxicity, (38) 760.
tractor, notes, (27) 791.
trap for fruit flies, (29) 656.
trap, use against Mediterranean fruit fly, (34)
360.
- Kerria japonica**, twig and leaf disease, (39) 253.
- Kerstingella** geocarpa, notes, (30) 235.
- Ketohexoses**, detection, (37) 206.
- Ketonic** function in metabolism, (40) 464.
- Ketoses** and aldoses, separation, (28) 504.
- Khadi**-ferment, toxicity, (29) 460.
- Khaja** senegalensis, insects affecting, (28) 555.
- Khaki** University, notes, (39) 699.
- Kidney** worms—
in hogs, (32) 479, 783; (37) 482.
life history, (38) 882.
localization and development in hogs, (29) 783;
(31) 484.
notes, (35) 878.
- Kidneys**—
from tuberculous animals, changes in, (26) 379.
heat production of, (30) 65.
phosphatids of, (30) 477.
work of, (26) 465.
- Kieselguhr-sulphite** mixture, fertilizing value, (33)
820.
- Kikuyu** grass—
culture experiments, (30) 632.
notes, (37) 29.
- Killdeer**—
destruction of locusts by, (28) 351.
notes, (27) 355.
- King**, Vernon, necrological notice, (39) 200.
- Kingbird**—
food habits, (28) 56; (38) 457.
western, destruction of locusts by, (28) 351.
- Kingfisher**, ruddy, subspecies of, (35) 252.
- Kinghead**—
analyses, (32) 169; (34) 39.
effect on baking quality of wheat, (34) 558.
- Kinosternon pennsylvanicum**, notes, (40) 260.
- Kitchen**—
economy, (40) 361.
model French, (29) 362.
waste, as a feeding stuff, (36) 367.
- Kitchens**—
communal, (39) 367.
construction and equipment, (35) 765.
equipment, (28) 461; (32) 65.
farm, water system for, (40) 789.
heating with hot water, (31) 893.
hotel and restaurant, regulations, (31) 857.
planning, (28) 694.
rolling, notes, (32) 562.
traveling, descriptions, (29) 567.
ventilation, (33) 68.
- Kite**, meteorological, evolution, (31) 213.
- Kites**, use in upper air exploration, (30) 416.
- Kjeldahl**—
distillation apparatus, description, (34) 10, 203.
flask, description, (36) 805.
flask, modified, description, (32) 807.
fume remover, description, (35) 612.

- Knapp Agricultural Day, notes, (28) 395; (32) 496.
 Knapp, Seaman A., school and farm, (30) 495.
 Knapweed, life history and bionomics, (32) 759.
 Knop's nutrient solution—
 composition, (28) 435.
 preparation, (31) 426.
- Knots—
 and splices, description, (35) 495.
 directions and illustrations, (27) 96.
 hitches, and splices, making, (31) 590.
 methods of making, (29) 390.
- Knotweed, toxic effect on pigs, (38) 589.
- Koch expedition across Greenland, (31) 213.
- Kochia—
 culture under shade, (27) 741.
 prostrate, analyses, (33) 466.
 salsoloids, analyses and digestibility, (27) 872; (32) 167.
- Koch's granules, notes, (26) 882.
- Kohl-rabi—
 analyses, (27) 469.
 combined fungus attacks on, (35) 245.
 culture experiments, (36) 735.
 culture in Rhodesia, (27) 32, 637.
 culture on moor soils, (40) 523.
 electrical stimulation, (40) 428.
 fertilizer experiments, (26) 428, 631; (30) 428.
 fields, weed control in, (40) 536.
 food value, (36) 863.
 mulching v. clean culture, (33) 534.
 pollination experiments, (35) 342.
 purin content, (40) 205.
 varieties, (26) 631.
- Koji acid from *Aspergillus oryzae*, (30) 202.
- Koji diastase, properties, (30) 806.
- Kokan timber, distribution and use, (38) 751.
- Koko tree as source of rubber and chicle, (28) 49.
- Kola—
 alkaloids in, (31) 358.
 culture in Dutch East Indies, (30) 697.
 insects affecting, (33) 153.
 trees and nuts, treatise, (26) 139.
- Koosam oil, refining, (27) 210.
- Korra, culture experiments, (32) 227.
- Köszegi motor plough, description and tests, (28) 486.
- Kraal manure—
 analyses, (33) 821; (35) 328.
 fertilizing value, (26) 133.
- Krafft's vaccine—
 use against hog cholera, (26) 383.
 use against swine plague, (26) 184.
- Kra-kie, notes, (26) 260.
- Kretzschmarie micropus, notes, (39) 452.
- Kriblon, composition and value, (28) 769.
- Kronoleum as wood preservative, (30) 647.
- Kronomyia n.g. and n.spp., descriptions, (26) 860.
- Kroo beans, culture experiments, (32) 227.
- Ktenol, analyses, (30) 555.
- Kudzu—
 beans, culture experiments, (33) 31.
 culture experiments, (35) 337.
 grass, yields, (29) 224.
 hay, analyses, (26) 362.
 vine, culture experiments, (27) 336.
 vine Japanese, notes, (27) 528.
- Kuehneola—
 albida, biology and morphology, (27) 648.
 albida, notes and treatment, (29) 50.
 fici, description, (31) 145.
- Ku²-ti—
 and China wood oil tree, crossing, (35) 539.
 oil, extraction and use, (28) 714.
- Kulthi—
 beans, culture, (32) 226.
 beans, yields, (39) 434.
 description, (30) 828.
 liming experiments, (36) 229.
 notes, (26) 362.
- Kumara, analyses, (28) 459.
- Kumiss—
 analyses, (26) 171.
 food value, (33) 78.
 microorganisms of, (26) 779.
 preparation and use, (34) 474.
- Kumquats—
 Australian desert, notes, (31) 238.
 classification, (32) 839.
 culture in Guam, (30) 41.
 culture in Texas, (38) 40.
 monograph, (31) 48.
- Kumri disease in horses, studies, (38) 287.
- Kunkelia nitens n.g. and n.s.p., description, (38) 454.
- Kurloff body, nature, (30) 681.
- Kuromoji seed, oil of, (37) 109.
- Kutter's formula, retardation factor in, (33) 183.
- Kyanization plants, description, (30) 647.
- Kyllingia alba, analyses and digestibility, (32) 167.
- Kymograph for study of small animals, (32) 565.
- Kynurenic acid, effect on nutritive value of diet, (36) 265.
- "La Mancha" in sheep, studies, (28) 182.
- La pataleta, notes, (30) 783.
- Laben raieb, composition, (36) 674.
- Labeo n.s.p., parasitic on sugar beet leafhoppers, (33) 747.
- Lablab—
 beans, anatomical structure, (28) 660.
 culture and characteristics, (34) 436.
 culture experiments, (32) 227.
 culture in Egypt, (34) 232.
- Labor—*see also* Agricultural labor.
 camps, sanitation and housing for, (33) 691.
 conditions in Great Britain, (26) 359.
 costs and seasonal distribution in Utah Valley, (40) 388.
 exchange for English farmers, (26) 190.
 in British Columbia, (32) 593.
 incomes of farmers, (36) 491, 492.
 manual, studies, (31) 861.
 redistribution, (37) 290.
 relation to energy requirement in food, (31) 862.
 requirements of livestock, (36) 790.
 saving devices for homes, (26) 790; (28) 566, 662.
 saving in livestock production, (40) 73.
 saving methods on the farm, (39) 794, 795.
- Laboratories—
 field, for research work, (33) 793.
 small, for research work, (32) 306.
- Laboratory—
 animals, pathologic conditions, (38) 283.
 conveniences, description, (36) 805.
 methods of the Army, manual, (39) 786.
 v. field experiments in soil biology, (36) 213.
- Laborers—
 Danish, standard of living, (32) 66.
 diet, (32) 857.
 diet in British Guiana, (30) 463.
 diet in Spain, (32) 562.
 families in Germany, diet, (26) 358.
 farm, *see* Agricultural labor.
 Finnish, living conditions, (28) 259.
 food shops for in Christiana, (32) 856.
 homes for, (31) 293.
 in America and Europe, standard of living, (26) 359.
 in Germany, dietary studies, (28) 66.
 in New Zealand, standard of living, (28) 863.
 protein requirements, (33) 662.
 sleeping house for, (34) 229.
 standard of living—
 in Chicago stockyards district, (32) 163.
 in Holland, (32) 163.
 in various countries, (31) 261.
 value of small plat of ground to, (38) 792.
- Laboulbeniales, parasitic on Chrysomelidae, (33) 657.
- Labradorite, decomposition by soil bacteria and yeast, (31) 121.
- Lac—
 culture in India, (28) 654.
 industry in India, (40) 550.
 insect, notes, (26) 248.
 tapping, (35) 347.
- Laccase, oxidizing influence on vegetable chromogens, (34) 33.
- Lace bugs of Ohio, (36) 755.
- Lace bugs, remedies, (37) 256.
- Lace-wing—
 brown, notes, (32) 651; (34) 357.
 fly, California green, (35) 757.
 fly, notes, (32) 654.
- Lachnellula chrysophthalma, notes, (28) 750.
- Lachnoidius greeni n.s.p., notes, (32) 57.
- Lachnopus sp. notes, (26) 354; (38) 558.
- Lachnosterna—*see also* June beetle and Phyllophaga.
 impunctata, notes, (34) 753.
 larvae as food supply, (36) 57.
 larvae, fumigation, (40) 256.

- Lachnosterna**—Continued.
patruslis, notes, (27) 657.
 revision, (35) 467.
spp., bacterial disease of, (32) 61.
spp., habits and control, (39) 565.
spp., notes, (26) 60; (29) 52, 561; (30) 656; (33) 351; (36) 753.
spp., oviposition, (38) 761.
 studies, (35) 760.
tristis, life history, (29) 359.
- Lachnus**—
curvipes n.sp., description, (28) 60.
glehnus n.sp., description, (35) 56.
juniperi, notes, (27) 255.
juniperivora n.sp., description, (40) 651.
parvus, new genus for, (40) 651.
persicae, remedies, (31) 155.
viminalis, notes, (33) 554.
- Lacquers**, methods of examination, (29) 811.
- Lactade**, manufacture and use, (40) 379.
- Lactalbumin**—
 composition, (38) 505.
 determination in milk, (33) 16.
 hydrolysis products of, (33) 867.
 lysin content, (31) 559.
 relation to color of milk fat, (31) 275.
 tryptophan in, (28) 411.
 value for growth, (37) 864, 865.
- Lactarius piperatus**, composition, (26) 802.
- Lactase**—
 in alfalfa, (32) 411.
 of mammary glands, (30) 204.
- Lactation**—
 early, effect on development of animals, (33) 265.
 effect on growth, (40) 877.
 period, metabolism during, (31) 663.
- Lactescence** in plants, (32) 130.
- Lactic acid**—
 as affected by—
 hydrogen peroxid, (28) 202.
 ultraviolet rays, (28) 201.
bacillus, Bulgarian, notes, (28) 777.
bacillus in butter, notes, (26) 478.
 bacteria—
 as affected by acid-destroying yeasts, (29) 8.
 as affected by proteolytic products of auto-
 lyzed yeast, (39) 10.
 biological properties, (31) 506.
 classification, (28) 75; (34) 76.
 classification and nomenclature, (35) 178.
 culture, use in silage, (33) 467.
 cultures, dried, preparation, (31) 773.
 development in milk, (29) 172; (36) 475, 502.
 effect on silage, (35) 373.
 formation of p-oxyphenylethylamin by,
 (32) 503.
 forms of, (29) 475.
 heat resistance, (39) 78.
 in dairy products, (28) 276.
 in milk, origin, (34) 473.
 in pasteurized milk, (36) 674.
 proteoclastic power, (36) 673.
 proteolytic activity in milk, (36) 476.
 reciprocal action of, (28) 276.
 relation to keeping qualities of butter, (39)
 78.
 resistance to pasteurization, (33) 675.
 use in ensiling beet tops, (34) 767.
 use in pickling cucumbers, (28) 616.
 use in silage making, (32) 567, 767.
 behavior in beef extract, (26) 408.
 behavior toward oxidizing agents, (26) 25.
 decomposition by yeasts, (37) 202.
 determination, (27) 498.
 determination in—
 biological products, (36) 808.
 organic substances, (32) 114.
 presence of protein, (29) 309.
 tomato products, (26) 25.
 urine, (34) 613.
 wine, (29) 119.
 effect on—
 baking quality of flour, (37) 861.
 bread fermentation, (27) 268.
 hemolytic reaction, (36) 878.
 plants, (37) 224.
 extraction with ether, (37) 414.
 ferment therapy, description, (26) 173.
 formation in incubated eggs, (28) 564, 711.
 germicidal effect in milk, (33) 460.
- Lactic acid**—Continued.
 in corn silage, (29) 712.
 honey, (26) 25; (28) 166.
 sisal, (29) 615.
 sour milk, (39) 613.
 wine, (31) 315.
 iodoform reaction of, (30) 414.
 origin and rôle in muscles, (31) 167.
 rôle in digestion, (36) 763.
 starters, preparation and propagation, (40) 79.
 thiophene test for, (40) 114.
 use in bread making, (33) 864.
 volatility of, (30) 707.
- Lactic**—
 ferment cultures in cheese making, (31) 375.
 ferment, keeping, (31) 375.
 fermentation, action of mixtures of salts on, (40)
 581.
 ferments—
 and streptococci, action of antiseptics on,
 (38) 77.
 as affected by temperature, (35) 482.
 effect on milk protein, (33) 714.
 habituation to poisons, (33) 803.
 in therapy, (39) 99.
 pharmaceutical, bacterial content, (27) 179.
 use, (27) 170.
 organism products, effect on *Bacillus typhosus*,
 (26) 776.
 starters, tests, (35) 176.
- Lacto**, preparation, (30) 61.
- Lactoantiserum**, use, (30) 112.
- Lactobacillus fermentum**, studies, (35) 278.
- Lactochrome**, investigations, (32) 19.
- Lactoglobulin**—
 composition, (38) 505.
 relation to serum proteins, (37) 8.
- Lactose**—
 absorption in the intestines, (28) 763.
 acetylated derivatives, optical rotatory powers,
 (36) 202.
 antiscorbutic potency, (40) 464.
 as protective agent for invertase, (26) 504.
 determination, (26) 709; (34) 611; (39) 315; (40)
 507.
 determination—
 after heating and addition of sodium bicar-
 bonate, (40) 613.
 in milk, (27) 506; (28) 205; (30) 414, 503; (33)
 503; (34) 506; (38) 615.
 in milk chocolate, (40) 14.
 effect on—
 ammonia production and use in killed
 plants, (28) 327.
 ammonification, (28) 718.
 infant digestion, (33) 663.
 intestinal flora, (36) 664.
 plant respiration, (26) 628.
 examination, (26) 313; (27) 411.
 extraction from milk serum, (26) 276.
 free extract as factor in milk judging, (39) 111.
 heat of combustion, (26) 160.
 heated, nutritive value, (34) 369.
 industrial manufacture, (40) 415.
 manufacture from milk, (30) 378.
 origin in milk, (30) 204.
 resorption in small intestine, (29) 268.
 separation from galactose and glucose, (26) 202.
 utilization by green plants, (32) 823.
- Lactuca**—
scariola, leaf position, (28) 228.
spp., rubber iron, (29) 241.
- Lady beetles**—
aphis eating, preservation, (26) 253.
 ashy-gray, notes, (31) 754.
 beneficial, in Piedmont, Italy, (28) 757.
 biology, (30) 754.
 collecting, (27) 361.
 common eastern, introduction, (32) 846.
 common, notes, (32) 654.
 control of aphids by, (34) 555; (39) 663.
 corrupted, notes, (29) 458.
 destruction by white fungus, (26) 454.
 destructive to citrus plant lice, (26) 755.
 injurious to potatoes, (30) 255.
 introduction into California, (34) 361.
 introduction into Florida, (39) 461.
 life history, (33) 562.
 life history and habits, (34) 555.
 notes, (27) 561; (29) 261.

- Lady beetles—Continued.
of Connecticut, (30) 856.
of Oregon, (30) 357.
oriental, introduction into Peru, (28) 159.
parasitic on orange scale, (26) 554.
rare, (33) 58.
selection and breeding, (38) 558.
two-spotted, notes, (30) 657.
- Laelaps—
echidninus, distribution on rats, (29) 755.
echidninus, notes, (32) 353.
multispinosus, notes, (34) 66.
n.sp., description, (35) 264.
- Laemobothrium intermedium n.sp., description
(38) 761.
- Laemophloeus sp., studies, (37) 356.
- Laestadia—
aesculi, investigations, (33) 347.
aesculi, perfect stage of *Phyllosticta paviae*
(33) 249.
camelliae, notes, (38) 354.
sp. on tea, (39) 57.
theae, notes, (28) 241; (31) 55.
theae, studies, (33) 650.
- Lagarotis n.sp., descriptions, (34) 456.
- Lagenaria vulgaris, notes, (29) 461.
- Lagerstroemia—
indica, dimorphic anthers of, (33) 524.
lanceolata, notes, (29) 443.
parviflora, notes, (34) 239.
- Lagochirus—
araneiformis, notes, (30) 356.
obsoletus, notes, (28) 854.
- Lahani marvel grass, analyses, (28) 768.
- Lake Huron current, (31) 615.
- Lake levels, paper on, (27) 115.
- Lake Tahoe summer level, forecasting, (36) 18.
- Lakes—
African, desiccation, (38) 15.
evaporation from, (27) 817.
meteorological influences on, (38) 317.
- Lallemantia iberica, culture experiments, (39) 229.
- Lamao Experiment Station, notes, (34) 635.
- Lamarckism and animal breeding, lecture on, (28)
271.
- Lamb—
changes in during cold storage, (28) 365, 860.
chop bone, analyses, (38) 626.
club, cooperative, in Tennessee, (30) 295.
composition and nutritive value, (34) 256.
- Lambliæ—
intestinalis, transmission by flies, (38) 563.
notes, (26) 246.
spores, transmission by flies, (30) 254.
- Lambs—*see also* Sheep.
alfalfa and corn for, (27) 899.
breeding for fur, (29) 872.
castrating, (26) 167.
clipping, (39) 775.
crossbred, tests, (29) 669.
docking and castrating, (29) 872.
fall clipping, (40) 569.
fall feeding, (39) 774; (40) 569.
fat, breeding for, (39) 273.
fatty degeneration of muscles, (36) 79.
feeding experiments, (26) 73, 268, 368, 568; (27)
372; (28) 671; (29) 271, 669, 772, 870, 871; (30)
769; (31) 666, 867; (32) 261; (33) 170, 758, 760,
761; (34) 567, 663; (35) 375, 672, 772; (36) 169,
170, 866; (38) 66, 670, 671, 672; (40) 874.
feeding for market, (39) 274.
fitting for exhibition, (30) 173.
growth in relation to fat content of ewes' milk,
(36) 569.
growth studies, (38) 472.
hairless, (39) 187.
hothouse, production, (27) 173.
kafir for, (39) 71.
metabolism experiments, (33) 761.
milk sickness affecting, (26) 74.
monthly gains, (39) 776.
on stomach worm pastures, (39) 372.
open sheds v. barns for, (36) 568.
orphan, feeding, (40) 278.
pasturing experiments, (39) 775; (40) 471.
protein and energy requirements, (31) 666.
pure-bred v. crossbred, (28) 669.
- quarter—
analyses, (32) 169; (34) 39.
coccinellids affecting, (33) 256.
- Lambs—Continued.
quarter—continued.
dissemination by farm animals, (26) 839.
water requirement, (32) 127.
range, cost of fattening, (29) 572.
roughages for, (36) 396.
searing iron v. knife for detailing, (29) 470.
self feeders and feeding yards for, (29) 872.
shipping and marketing, (28) 672.
unborn, disease of, (34) 275.
winter production, (32) 468.
winter-fed, loss of, (26) 299.
worm infestation, (37) 374.
- Lamellicornia of British India, (40) 63.
- Lameness in horses, treatise, (36) 280.
- Laminaria—
agardhii (saccharina) in permeability studies,
(39) 26.
respiration after death, (39) 631.
saccharina as affected by bivalent cations, (33)
328.
saccharina, permeability of cells, (33) 127.
spp., analyses, (37) 814.
- Laminarin in Fucoideae, (29) 566.
- Laminitis, paper on, (34) 576.
- Lamp traps for cochylis moth, (27) 56.
- Lampatia timber, distribution and use, (38) 751.
- Lamplack, moistening, (33) 322.
- Lampronia rubiella—
notes, (36) 754.
remedies, (38) 466.
- Lamprosominae, catalogue, (30) 458.
- Lampsana vulgaris, host plant of lettuce mildew
(26) 342.
- Lamtoro as shade for coffee, (34) 535.
- Lamziekte—
in cattle, investigations, (26) 173.
in South Africa, (35) 678.
notes, (28) 780.
papers on, (29) 476.
review of investigations, (33) 384.
studies, (28) 280.
summary and digest of data, (36) 161.
- Land—
areas, mapping, (37) 651.
arid, reclamation, (36) 46.
arid, reclamation in Oregon, (33) 889.
bank in New York, (39) 796.
bank in Rhodesia, (27) 795.
banks in South Africa, (29) 90.
banks, organization and operation, (29) 692.
brush, use of goats in clearing, (26) 51.
classification and tenure, (39) 592.
clearing, (28) 84; (30) 86; (32) 484, 589; (35) 84;
(36) 89, 498; (39) 687; (40) 788.
clearing—
and grubbing, handbook, (38) 490.
by-products, (37) 286.
cost and methods, (36) 785.
in Lake States, (31) 288.
in western Washington, (27) 189.
trials, (39) 493.
with explosives, (26) 591; (35) 887.
credit, *see* Agricultural credit.
cultivated, reverting to natural conditions, (36)
130.
cultivated, seeding to meadows, (35) 639.
cultivation in Mexico, (26) 594.
cut-over, *see* Cut-over land.
drag, description and use, (27) 293.
government valuation, in New Zealand, (30)
193.
Grant College Engineering Association, (32) 8;
(35) 297.
grant colleges, *see* Agricultural colleges.
grant of 1862, (40) 195.
grants in United States, treatise, (34) 594.
holding, effect on decline of Roman Empire
(35) 694.
holding systems in England, (34) 689.
improvement credit in British India, (26) 793.
improvement in Province of the Rhine, (37) 697.
inclosure movement in England, (40) 688.
laws of Great Britain, revision, (30) 693.
laying down to grass, (26) 734.
leasing in Belgium, treatise, (33) 92.
logged-off, clearing, (37) 87.
logged-off, of western Washington, (35) 892.
mortgage associations in Germany, (27) 795.
mortgage reform in Wisconsin, (30) 592.

Land—Continued.

- new, preparation for crops, (26) 533.
- not in farms, utilization, (39) 592.
- ownership—
 - by negroes in Virginia, (36) 392.
 - handbook, (31) 490.
 - tenure, and taxation, treatise, (32) 891.
 - theories of Karl Marx, (29) 491.
- plaster, *see* Gypsum.
- prairie, drainage, (38) 387.
- private colonization, (40) 192.
- problem and rural welfare, (37) 290, 593.
- problem in Great Britain, (36) 392.
- problem in Texas, (34) 488.
- reform movement in Russia, (35) 392.
- reforms in Russia, (30) 792.
- registration in New Zealand, (35) 793.
- registration, Torrens system, (34) 489.
- rental value in Vaud, Switzerland, (28) 489.
- rented, owner's oversight of, (26) 487.
- renting in England, Scotland, and Ireland, (34) 689.
- settlement, (40) 193, 688.
- settlement—
 - and tenure in New Zealand, (40) 195.
 - by ex-service men in England and Wales, (35) 296.
 - for ex-service men, (39) 89, 648, 702; (40) 389, 591, 687, 790.
 - Government aid, (35) 392; (39) 593.
 - in America, (32) 481; (34) 482.
 - British Empire, (34) 594.
 - California, (36) 593; (37) 190; (40) 194, 389, 591.
 - Canada, (38) 791; (40) 790.
 - Ceylon, (39) 89.
 - Great Britain, (37) 190, 390, 791.
 - South Africa, (39) 89.
 - the Punjab, (40) 595.
 - upper Wisconsin, (34) 431; (39) 396.
 - on irrigation projects, (40) 687.
- settlement opportunities in—
 - Colorado, (39) 90.
 - Michigan, (39) 796.
 - Montana, (39) 796.
- settlement scheme in Grenada, (27) 92.
- surveying in Queensland, (34) 890.
- surveying, treatise, (34) 485.
- system of Great Britain, treatise, (37) 697.
- taxation, (29) 391, 692; (32) 389.
- tenancy—
 - in California, (37) 190.
 - central Europe, (29) 895.
 - Great Britain and Ireland, (32) 193.
 - Illinois, (36) 892.
 - Iowa, (30) 491; (34) 193, 792.
 - North Atlantic States, (26) 687.
 - North Central States, (26) 686.
 - southwestern States, (34) 90.
 - Texas, (34) 289, 488.
 - the South, (36) 893.
 - United States, (26) 790; (34) 489; (37) 593.
 - Western states, (26) 790.
- profitable, in Iowa, (27) 193.
- social aspects, (40) 890.
- studies, (40) 890, 892.
- v. ownership, (26) 687.
- tenants—
 - housing conditions, (34) 488.
 - income, (28) 388.
 - paying for high-priced land, (26) 487.
- tenure—
 - and administration in British India, (32) 891.
 - and conveyances in Missouri, (34) 489.
 - and settlement in New Zealand, (31) 191; (37) 791.
 - in Australia, (26) 291.
 - England and Norway, (30) 90.
 - England, treatise, (28) 189; (29) 895.
 - Illinois, (36) 892.
 - Papua, (26) 291.
 - Texas, (30) 591.
 - problems in United States, (35) 89.
 - years of occupancy by, (31) 690.
- tillable, in United States, (30) 692.
- title registration—
 - law in Nebraska, (37) 190.
 - law in New York, (37) 190.
 - manual, (29) 895.
 - Torrens system, (37) 492, 888; (39) 89.

Land—Continued.

- use by schools teaching agriculture, (32) 896; (33) 396, 797; (34) 394.
- use in common, (33) 893.
- use in common in Bavaria, (34) 690.
- uses in Denmark, (31) 390.
- valuation, Christ-Junge method, (29) 595.
- valuation, factors in, (32) 286.
- value and net land revenue, relationship, (28) 790.
- values, improvement, (28) 292.
- values in France, treatise, (40) 892.
- Landlord and tenant—
 - contract between, (32) 390.
 - distribution of produce between, (31) 390.
 - division of capital between, (31) 192.
 - partnership between, (30) 399.
- Lands—
 - acid, utilization, (30) 23.
 - agricultural, in different countries, (31) 390.
 - agricultural, in New Jersey, (31) 390.
 - agricultural, in United States, (30) 692.
 - agricultural, reorganization in Bavaria, (34) 594.
 - alluvial, underdrainage, (26) 685; (28) 890.
 - arable, of Argentina, (31) 215.
 - crawfish, reclamation, (27) 621.
 - fallowing experiments, (28) 321.
 - forest, *see* Forest lands.
 - gullied, of west Tennessee, (30) 19.
 - gullied, reclamation, (33) 392.
 - heavy, reclamation, (27) 621.
 - injured by volcanic ash, reclamation, (32) 31.
 - irrigable, classification, (36) 185.
 - irrigable, in Utah, (29) 722.
 - irrigated—
 - drainage, (27) 386; (31) 783; (33) 88, 683; (34) 86, 483; (36) 399; (37) 86, 587; (38) 388.
 - pastures for, (32) 628.
 - settlement, (29) 491.
 - judging, (32) 321.
 - logged-off—
 - clearing, (26) 787.
 - of western Washington, (26) 592.
 - reclamation, (32) 485.
 - long-term leases for, (26) 593.
 - oat sick, notes, (30) 518.
 - of Japan, redivision, (40) 892.
 - of Nile delta, agricultural value, (31) 119.
 - overflowed, reclamation, (29) 85; (30) 787; (32) 883, 884.
 - pine, clearing, (28) 289.
 - preparation, (30) 697.
 - public—
 - administration in Minnesota, (34) 594.
 - and private, in British Columbia, (32) 593.
 - in Alaska, (36) 290.
 - in United States, (32) 389; (36) 290.
 - settlement in United States, (34) 892.
 - scouring, of Somerset and Warwickshire, (32) 215.
 - swamp, *see* Swamp.
 - tidal, reclamation, (30) 448; (32) 793.
 - waste, reclamation, (29) 149; (32) 30; (34) 22; (37) 214.
 - wet, of Louisiana, drainage, (31) 185; (39) 291.
 - wheat, of western Australia, (29) 315.
- Landscape—
 - architecture of the small place, (39) 546.
 - areas, grading, (26) 338.
 - design, treatise, (38) 542.
 - engineering in National Forests, (40) 248.
 - gardening—
 - in Cleveland, (29) 495.
 - in relation to roadside planting, (39) 449.
 - list of plants for, (35) 647.
 - notes, (32) 143.
 - prairie spirit in, (34) 536.
 - treatise, (34) 45, 439; (35) 746; (37) 546, 547.
 - use of models in, (39) 847.
- Languria mozardi, *see* Clover stem borer.
- Lanius ludovicianus gambeli, destruction of locusts by, (28) 351.
- Lantana camara, control by parasites, (37) 359.
- Lantern fly injurious to corn, (31) 249.
- Lanthanum, effect on permeability, (34) 34.
- Lantz, D. E., biographical sketch, (39) 400.
- Laphygma—
 - exigua, notes, (27) 54; (31) 252, 849.
 - exigua remedies, (26) 250.
 - frugiperda, *see* Army worm, fall.
- Laramie-Poudre irrigation tunnel, (26) 892.

- Larch**—
 American, cambium development in, (29) 343.
 cambial activity, (37) 127.
 canker, notes, (32) 544, 844.
 canker, occurrence on pines, (30) 248.
 case bearer, notes, (28) 57; (32) 448.
 case bearer, remedies, (33) 859.
 case bearer, studies, (28) 857.
 Chermes, studies, (40) 262.
 defoliated, growth in, (29) 643.
 European, drought resistance, (38) 44.
 form variations, (39) 352.
 insects of bark and wood, (40) 453.
 leaf disease, notes, (34) 849.
 longicorn beetle affecting, (32) 155.
 mistletoe, injurious effects, (34) 547.
 moth, remedies, (33) 859.
 needle cast, notes, (30) 545.
 needles, drying, notes, (29) 156.
 plantations in Ireland, (31) 240; (33) 542.
 Razoumofskya infection, (40) 253.
 roller, gray, notes, (30) 550.
 sawfly—
 fungus parasite of, (26) 63.
 large, biology and remedies, (28) 658.
 large, chalcidid parasite of, (26) 353.
 large, notes, (27) 53, 460, 552; (30) 362; (32) 754.
 large, parasites of, (32) 352.
 notes, (28) 653; (29) 252; (30) 845; (38) 257.
 studies, (35) 54.
 seedlings, absorption of fertilizers by, (26) 443.
 seeds, germination tests, (27) 444.
 stands, effect on soil physics, (26) 140.
 timber, tests of strength, (28) 744.
 volume tables, (39) 246.
 western—
 analyses, (38) 309.
 description and use, (35) 451.
 galactan of, (35) 611.
 growth and adaptation, (36) 144.
 properties and uses, (29) 43.
 volume tables for, (34) 641.
 witches' broom on, (36) 453.
- Lard**—
 adulteration, (31) 161.
 adulteration, detection, (27) 716; (29) 798; (32) 802.
 analyses, (31) 357.
 and milk fat, comparative value for growth, (36) 160.
 as affected by feeding stuffs, (32) 21; (40) 772.
 as affected by peanuts, (37) 367.
 detection of foreign fats in, (39) 805.
 digestibility, (34) 364, 659; (40) 268.
 examination, (28) 65.
 failure to promote growth, (33) 263.
 notes, (27) 365.
 preparation, (35) 317.
 preservatives, detection, (31) 508.
 production in United States, (40) 614.
 refractive index, (27) 615.
 rôle in glycogen formation, (31) 763.
 short-weight packages, (26) 461.
 stearin, refractive index, (27) 615.
 substitute in Austria, (29) 564.
 substitute, metallic nickel in, (29) 459.
 substitutes accessory growth substance in, (38) 265.
 substitutes for, (33) 660.
 supply in United States, (38) 866.
 water content, determination, (26) 207.
- Laria**—*see also* Bruchus.
 rufimana, studies, (27) 563.
- Lark**—
 California horned, destruction of locusts by, (28) 351.
 western meadow, destruction of locusts by, (28) 351.
 western meadow, feeding habits, (28) 351.
- Larkspur**—
 anthocyan of, (34) 709.
 description, (32) 474.
 notes, (32) 778.
 of Wyoming, analyses, (30) 577.
 poisoning of livestock by, (27) 180; (29) 280; (35) 779; (39) 386, 587, 787, 788.
 seed fluid extract, insecticidal value, (32) 56.
 tall, eradication, (38) 82.
- Larus franklini**, notes, (27) 355.
- Larus hyperboreus**, subspecies of, (40) 254.
- Larvae**, rearing, (34) 651.
- Larvicides**, tests, (26) 559.
- Laryngo-tracheal catarrh** in horses, (34) 480.
- Lasconotus**, revision, (27) 259.
- Lasia globosa** injurious to alfalfa, (33) 555.
- Laslocampidae** of Japan, (39) 262.
- Lasioderma serriorme**, *see* Cigarette beetle.
- Lasioderma** sp., notes, (26) 560.
- Lasiodiplodia**—
 nonvalidity of genus, (31) 445; (34) 242.
 theobromae, notes, (29) 155, 345; (30) 50; (35) 45; (37) 452, 553; (40) 155, 252.
 triflorae n.sp., studies, (34) 748.
 tubercicola, description, (30) 150.
 tubercicola, studies, (34) 242.
- Lasiophthicus pyrastris**—
 destructive to citrus plant lice, (26) 755.
 parasitic on rose aphids, (31) 250.
- Lasioptera**—
 fructuaria n.sp., description, (34) 852.
 vitis, notes, (37) 255.
- Lasiopteriariae**, studies, (40) 163.
- Lasiolina** n.spp., descriptions, (40) 263.
- Lasiophaeria culmorum** n.s.p., studies, (27) 154.
- Lasiostroma pisorum**, notes, (26) 449.
- Lasius**—
 (Acanthomyops) interjectus, remedies, (34) 62.
 niger americanus, life history, (29) 860.
 niger americanus, studies, (30) 546.
- Laspeyresia**—*see also* Grapholitha.
 caryana, notes, (38) 256, 762; (39) 557.
 caryana, studies, (38) 157.
 interstinctana, *see* Clover seed caterpillar.
- moesta**—
 brief account, (40) 652.
 description, (36) 358.
 in Maryland, (38) 154.
 studies, (39) 259, 260; (40) 756.
 summary of information, (39) 761.
 pomonella, *see* Codling moth.
 prunivora, notes, (40) 756.
 strobilella, notes, (31) 849.
- Lassen Peak**, eruption of, (36) 419.
- Latania** scale, notes, (28) 854.
- Laterite**—
 as sewage filtering material, (28) 789.
 formation and composition, (31) 119.
 formation in soils, (30) 320.
- Lateritization** of soils under arid climates, (28) 812.
- Laternea columnata**—
 notes, (39) 30.
 on sugar cane, (40) 157.
- Latex**—
 hydrometer, use, (32) 48.
 of rubber plants, physiology of, (31) 128.
 physiological studies, (32) 328.
- Latexes**, caoutchouc-bearing, constitution, (27) 244.
- Lath**—
 industry in Canada, (26) 544; (28) 644; (30) 46; (32) 841; (35) 347; (36) 244; (37) 245; (38) 146.
 industry in United States, (30) 845.
 production in 1915, (37) 148.
 production in 1916, (39) 452.
 production in 1917, (40) 843.
- Latheticus oryzae**, studies, (37) 356.
- Lathromeroides neomexicanus** n.s.p., description, (34) 556.
- Lathyrus**—
 culture experiments, (28) 633.
- sativus**—
 anatomical structure, (31) 314.
 for pigs, (28) 364.
 poisoning of horses by, (35) 282.
 spp., culture experiments, (28) 532.
 sylvestris, yields, (30) 134.
 tingitanus as green manure, (39) 31.
 tingitanus, culture experiments, (30) 632.
- Latitude**—
 annual variation of, (35) 619.
 effect on forest development, (30) 45.
- Latreillimyia bifasciata**, notes, (26) 856.
- Latrodictus mactans**, notes, (38) 566.
- Laundering**—
 home, aids in, (29) 792.
 suggestions for, (33) 495.
- Laundries**, equipping, (28) 461.
- Laundry**—
 cooperative, (30) 395; (35) 191.
 machinery and equipment, notes, (27) 793.

Laundry—Continued.

machinery, use in disinfection and disinsection, (40) 551.

Laurel—

green, analyses, (26) 65.
leaves, evolution of hydrocyanic acid from, (26) 228.

leaves, free hydrocyanic acid in, (27) 635.

psyllid, studies, (37) 849.

silver leaf disease affecting, (29) 845.

Laurentia, North American species, (40) 761.

Lauric acid salts, solubility, (35) 416.

Lauric and myristic acids, separation, (35) 416.

Laureon vinosa, life history and habits, (32) 756.

Laurus nobilis, oil of, (36) 803.

Lava—

analyses, (30) 899.

bricks, efflorescence on, (29) 203.

of Hawaii, studies, (33) 418.

Lavandula spica, oil of, (36) 803.

Lavatera, tests, (37) 143.

Lavender, culture in Victoria, (27) 346.

Lavender Phoma disease, studies, (36) 851.

Lavocat for horses and cattle, (30) 67.

Law of minimum—

application in irrigation, (32) 481.

notes, (27) 721, 823; (28) 420, 518, 722; (30) 135, 228, 321, 519, 627; (31) 17, 28, 118, 221, 327; (34) 218.

Lawn—

grass, Korean, notes, (26) 362.

grasses as affected by soil acidity, (40) 125.

grasses, new Sclerotium disease, (39) 753.

mixtures, tests, (29) 145; (35) 742.

Lawns—

bibliography, (34) 238.

construction and maintenance, (35) 145.

eradication of dandelions on, (39) 37.

fertilizer experiments, (37) 446.

handbook, (27) 41.

in sand hills of Nebraska, (35) 835.

in the South, management, (26) 299.

management, (32) 828.

notes, (27) 346.

preparation and care, (34) 836.

starting, (29) 148.

Lawsonia alba, studies, (35) 449.

Lead—

arsenate—

addition of soft soap to, (33) 538.

adhesiveness of, (26) 256; (38) 858.

analyses, (26) 65, 715, 757; (27) 344, 441, 755,

756, 757; (29) 42; (31) 49, 142; (32) 169; (33)

47, 735; (34) 636, 639; (36) 39; (37) 243; (38)

643; (39) 240.

and soap mixtures, soluble arsenic in, (31)

409.

as fungicide for apple scab, (36) 50.

as summer spray for apples, (33) 46.

basic, preparation and properties, (37) 410.

chemistry of, (32) 713.

costs and efficiency, (40) 163.

decomposition by water, (37) 802.

different brands, (39) 348.

dihydrogen, (39) 767.

dust, use with sulphur, (39) 548.

effect of soap on settling, (26) 354.

effect on apple roots, (39) 40.

effect on apples, (33) 46; (40) 639.

for boll weevil, (40) 752.

fungicidal and insecticidal value, (35) 39.

fungicidal value, (27) 153; (31) 151; (33) 237,

648; (34) 146; (35) 549; (39) 652.

injury to stone fruits, (37) 848.

insecticidal value, (27) 439; (28) 659; (32)

158, 847; (34) 60, 146, 548; (37) 759.

insecticidal value of various forms, (31) 350.

lime-sulphur mixture, studies, (29) 802.

methods of analysis, (27) 496.

occurrence in grape products, (27) 243.

paste as affected by freezing, (36) 456.

poisoning, danger from, (33) 98.

poisoning of apples with, (31) 141.

powdered, insecticidal value, (30) 455, 840.

powdered, use, (29) 852.

powdered, use on tobacco, (26) 453.

preparation, (26) 539; (40) 801.

preparation and properties, (28) 308.

preparation and tests, (33) 801.

solubility in mixed sprays, (33) 710.

Lead—Continued.

arsenate—continued.

studies, (36) 313, 501.

tests, (27) 440; (28) 48; (35) 342; (37) 448.

use against tobacco hornworms, (29) 356;

(31) 454; (38) 159.

use in agriculture, (34) 851.

use in viticulture (36) 537.

use with lime sulphur, (39) 251.

use with other sprays, (38) 258.

v. calcium arsenate as an insecticide, (33)

339, 340.

as affected by—

alkaline natural water, (30) 511.

various waters, (33) 778.

water, (31) 512.

basic white v. sublimed, as priming for paint,

(33) 91.

benzoate, effect on potatoes, (27) 151, 237.

boring beetle, (39) 467.

chlor arsenate, preparation and properties, (36)

412.

chromate, insecticidal value, (27) 161; (29) 758.

chromate, use against caterpillars, (32) 850.

detection in water, (34) 410.

determination in—

baking powder, (27) 499; (29) 799, 866; (32)

298.

beer, (26) 409.

water, (32) 505; (38) 506.

effect on germ cells of male rabbits and fowls,

(32) 861.

effect on nitrogen-fixing bacteria, (38) 428.

effect on plant growth, (38) 819.

foils for packing tea, (33) 66.

in orchard soils, (31) 720.

in pharmaceutical zinc oxid, (40) 413.

metallic, effect on *Aspergillus niger*, (30) 824.

nitrate—

effect on growth of corn, (31) 226.

effect on sugar beets, (26) 225; (30) 529;

(34) 38.

preparation, (40) 801.

oxid, determination in lead arsenate, (27) 496.

oxid, effect on germination of seeds, (29) 528.

poisoning—

effect on germ cells, (33) 368; (35) 564.

in waterfowl, (39) 687.

through water supplies, (30) 418.

removal from water, (34) 390.

salts, effect on—

ammonification and nitrification in soils,

(31) 120.

disease susceptibility in cereals, (29) 844.

plants, (28) 731.

wheat, (29) 520; (35) 324.

salts, fertilizing value, (30) 627.

toxic effect on plants, (38) 628.

Leadwort, notes, (29) 441.

Leaf—

blade, sheath, and internode, physiological

unity of, (35) 330.

blister mite, notes, (27) 565.

bug, dusky, affecting potatoes, (32) 87.

bug, dusky, notes, (33) 352.

bug, four-lined, *see* *Poecilocapsis lineatus*.

color, relation to light absorption, (33) 825.

crumpler, notes, (26) 856.

development, studies, (37) 324.

diseases in Jamaica, (39) 849.

epidermis, light sensitivity, (37) 222.

etiolation due to cold, (35) 330.

fall, relation to light and temperature, (27) 221.

fall, studies, (32) 825.

hairs, chemotactic reaction, (29) 828.

miner, serpentine, notes, (32) 753; (33) 255.

miner, serpentine, studies, (29) 857.

miner, spike-horned, studies, (36) 156.

miners, monograph, (34) 553.

miners, notes, (28) 159.

miners of Hawaii, (30) 660.

mold, analyses, (32) 520; (34) 521.

mold, fertilizing value, (29) 622.

mold for greenhouse crops, (40) 740.

mold, formation, (28) 814; (33) 24.

pigments, notes, (31) 728.

position of compass plants, studies, (28) 228.

roller, oblique banded, notes, (28) 854; (35) 853.

rollers, notes, (27) 161.

sewer, notes, (38) 358.

Leaf—Continued.

- sheath, value in descriptive botany, (36) 628.
 structure as affected by light and shade, (37) 747.
 structure as related to position on tree, (39) 29.
 surface films, effect on transpiration, (30) 726;
 (31) 825.
 temperature, determination, (30) 223.
 temperature, review of literature, (32) 640.
 tissue, parasitized, studies, (27) 543.
 variegation, transmission through grafts, (26) 529.
 water in *Gossypium*, studies, (28) 822.
 weevil, new, in New York, (36) 859; (37) 359.
- Leafhoppers—**
 egg parasites, (37) 466.
 life histories, (35) 552.
 new species, (28) 753.
 notes, (40) 354.
 of Maine, (33) 356.
 of Nova Scotia, (40) 261.
 of Tennessee, (36) 654.
 parasites of, (39) 870; (40) 265.
 studies, (27) 858.
- Leafy twigs, preservation, (37) 837.**
Leaming, J. S., biographical sketch, (26) 437.
Least squares, methods of, (36) 419.
- Leather—**
 adulteration, (29) 866.
 availability of nitrogen in, (26) 523; (28) 725; (38) 423.
 beetle in Hawaii, (40) 266.
 chemistry, (40) 714.
 cuttings as cattle feed, (37) 171.
 fertilizing value, (38) 121.
 ground, fertilizing value, (26) 323.
 home manufacture, treatise, (38) 13.
 manufacture, studies, (30) 615.
 meal, detection in dried blood, (38) 711.
 methods of analysis, (27) 205; (32) 314; (35) 316.
 nitrification of, (31) 724.
 roasted, availability of nitrogen in, (26) 725.
 studies, (29) 207.
 supply of United States, (39) 477.
 tannery sludge, fertilizing value, (28) 734.
 volumometer, (40) 208.
 waste as source of lime, (38) 22.
 waste, fertilizing value, (29) 129; (33) 125, 327.
- Leathers, identification, (28) 713.**
Leavening agents, treatise, (33) 66.
- Leaves—**
 absorption of sun energy in, (30) 45.
 aging, translocation of materials in, (32) 825.
 analyses, (35) 629.
 and seeds, dietary relationship, (37) 264.
 arsenic and manganese content, (29) 628.
 as affected by rusts, (30) 453.
 as cause of soil deterioration, (32) 319.
 as source of potash, (34) 327.
 autumn coloration, (36) 633.
 autumn, retention of green color in, (36) 225.
 bacterial tubercles in, (29) 30.
 blackening, studies, (30) 524.
 carbohydrates in, variations, (29) 827.
 cell shape, (39) 226.
 chemical transformations in, (36) 633.
 chlorophyll quotients in, (30) 629.
 closure of, (36) 129.
 coloration of, (31) 128.
 composition and fertilizing value, (38) 722.
 composition at different periods of growth, (32) 128.
 dead, utilization, (39) 808.
 detached, respiration in, (28) 528.
 development in partial shade, (30) 522.
 dried, fertilizing value, (27) 337.
 effect on root formation and geotropic curvature, (37) 325.
 etiolated, effect of light on, (33) 826.
 formation of anthocyanin in, (28) 36.
 green, carbohydrate content, (35) 131.
 heat production by, (28) 630.
 incipient drying, (38) 522.
 leaching of nitrogenous and mineral matter from, (29) 218; (32) 128; (35) 629.
 light relations, (27) 221.
 mineral content by day and night, (27) 630.
 morphology and evolution, (36) 729.
 movement of minerals in, (27) 229.
 movement of water in, (28) 822.
 nitrite assimilation in sunlight, (40) 425.

Leaves—Continued.

- nitrogen content, (28) 328.
 osmotic pressure in relation to soil moisture, (36) 733.
 osmotic pressure in, studies, (27) 631.
 penetration by violet and ultraviolet rays, (31) 129.
 phosphoric acid and nitrogen content, (27) 731.
 plant food constituents, (37) 629.
 red and yellow colorations in, (30) 729.
 relation of water content to transpiration, (27) 331.
 resistance to transpiration, (28) 528.
 respiration in darkness, (26) 822.
 respiration in, periodicity, (29) 324.
 respiratory coefficient, (31) 33.
 rôle in soil absorption, (32) 319.
 senile changes in, (34) 222.
 senility in, (32) 728.
 symbiosis with fungi, (37) 327.
 translocation of sugars from, (26) 229.
 transpiration as affected by sprays, (36) 454.
 transpiration in, (28) 823; (29) 217; (31) 222.
 transpiration in as affected by light, (28) 529.
 transpiring power, (36) 824.
 variegated, anatomy of, (33) 724.
 variegation of, (26) 529.
 water content, (26) 627; (38) 223.
 wet, transpiration in, (27) 222.
 white speck disease of, (35) 650.
 winter and summer, comparison, (37) 327.
 xerophotic movements in, (36) 430.
- Leben, composition, (36) 674.**
Lecanobius cockerelli in California, (30) 753.
Lecanodiaspis rufescens, notes, (26) 149.
- Lecanium—**
 capreae, chalcid parasites, (40) 651.
 cerasi, remedies, (33) 653.
 cerasifex, notes, (27) 455.
 corni, notes, (26) 555.
 corni, studies, (37) 662.
 hesperidum, notes, (33) 746.
 nigrofasciatum, notes, (29) 353.
 nigrum, notes, (28) 353.
 oleae—*see also* Black scale.
 notes, (27) 357, 857; (30) 455.
 parasite of, (26) 655.
 persicae, notes, (36) 355, 755.
 quercifex, notes, (29) 53.
 quercifex, studies, (32) 553.
 spp. in Seychelles, (30) 252; (33) 555.
 spp., notes, (26) 556, 655.
 tulipifera, notes, (27) 755.
 viride, fungus disease affecting, (26) 553.
- Lecychna fruit fly, notes, (29) 652.**
Lecithids in cod liver oil, (33) 166.
- Lecithin—**
 and allied substances, (39) 202.
 as source of phosphoric acid, (29) 423.
 assimilation by ruminants, (31) 71.
 composition, (35) 201.
 determination, (26) 709; (27) 502, 612.
 effect on—
 calcium and magnesium excretion, (26) 766.
 complement-containing serums, (31) 478.
 growth of white mice, (35) 866.
 hemolytic action of peptones, (35) 881.
 emulsions, preparation and determination of strength, (29) 809.
 fatty acids of, (31) 608.
 flocculations with acids, (27) 612.
 food preparations from, (32) 854.
 for pigs, (30) 571.
 hydrolysis and constitution, (27) 804.
 importance in animal organism, (33) 758.
 importance in metabolism of adults, (29) 664.
 in different tissues, (31) 577.
 in eggs, (26) 67; (28) 313; (29) 563.
 in horse kidneys, (30) 477.
 loss from grass during curing, (32) 111.
 metabolism of, (26) 159, 765; (32) 764.
 nutritive value, (26) 565.
 phosphoric acid in peas, (40) 508.
 phosphoric acid, loss in, (31) 112.
 phosphorus, determination in macaroni, etc., (33) 14.
 products of soils, (32) 718.
 purification, (30) 410.
 rôle in nutrition, (27) 67.
 synthesis, (31) 10.

- Lecithin**—Continued.
 synthesis in hens, (28) 269.
 therapeutic use, (27) 67.
- "L'éclair bleu" reaction**, studies, (40) 311.
- Lecythis ollaria**, fungi affecting, (28) 350.
- Leeches**, notes, (33) 659.
- Leeks**—
 cooking, (31) 856.
 thrips affecting, (32) 553.
 wild, occurrence of arsenic in, (27) 269.
- Leersia hexandra**, notes, (26) 362; (30) 230.
- Lees**, lead arsenate in, (27) 243.
- Leghorns**, treatise, (28) 774.
- Legume**—
 anthracnose, notes, (39) 146; (40) 48.
 bacteria and nonlegume plants, symbiosis, (37) 819.
 cultures, distribution, (28) 476.
 diseases in Switzerland, (37) 47.
 diseases, notes, (39) 353.
 diseases, studies, (33) 547.
 pod maggot, studies, (27) 553.
 pod moth, studies, (27) 552.
 proteins, utilization (26) 564.
 seed, investigations, (40) 39.
 seeds, abortive position in pod, (40) 521.
 seeds, hard, germination, (35) 835.
 seeds, ripening, (35) 523.
 straw, feeding value, (38) 168.
- Legumes**—
 analyses, (31) 829.
 anatomical structure, (28) 660.
 and flaxseed combinations, preparation, (38) 365.
 and nonlegumes, associative growth, (32) 432; (40) 821.
 and nonlegumes, effect of association, (33) 527.
 as affected by sodium chlorid, (40) 434.
 food, (34) 164.
 green manure, (35) 517; (38) 231.
 orchard cover crops, (28) 144.
 pasture crops, (39) 130.
 creatinin in, (32) 560.
 culture, (39) 834; (40) 39.
 culture experiments, (33) 31, 227; (34) 228, 736; (38) 526, 527, 634.
 culture on moor soils, (39) 438.
 decomposition in soil, (40) 214.
 digestibility, (33) 361.
 dried, cooking, (40) 360.
 effect on—
 composition of cereals, (34) 230.
 quality of butter, (29) 278.
 soil acidity, (38) 20.
 soil nitrogen, (26) 196.
 exhibits for farm and school use, (29) 93.
 fertilizer experiments, (38) 527, 829; (39) 328; (40) 429.
 fungoid and insect pests, (40) 747.
 growth and nitrogen-fixing power on acid soils, (36) 514.
 growth as affected by manganese sulphate, (33) 820.
 hybridization experiments, (34) 228.
 importance for milch cows, (38) 779.
 in desert agriculture, (38) 230.
 inoculation, (29) 142, 228, 326; (31) 131, 830; (32) 423; (39) 116, 232, 338, 439, 723, 813; (40) 215, 719, 736, 822.
 inoculation experiments, (26) 322; (27) 322, 419, 531; (29) 316; (30) 335; (31) 524; (32) 630, 818; (33) 322, 727.
 liming experiments, (36) 229.
 nitrogen assimilation by, (33) 426.
 nitrogen fertilization, (27) 235.
 nitrogen fertilization v. inoculation, (35) 517.
 nitrogen fixation by, (26) 37; (38) 528.
 nodule bacteria of, (33) 823.
 pentosans of, (34) 168.
 preservation, treatise, (29) 116.
 production in Spain, (30) 791; (35) 393; (37) 827; (40) 793.
 purin content, (40) 205.
 relation to beriberi, (27) 461.
 selection experiments, (35) 334.
 silage from, (38) 636.
 stachyose in, (28) 761; (31) 13.
 use in the dietary, (29) 862.
 varieties, (26) 424; (28) 828; (31) 829; (34) 736; (35) 134; (38) 634.)
- Legumes**—Continued.
 water requirements, (38) 227.
 wild, culture experiments, (34) 736.
- Leguminosae**—
 comparative morphology, (31) 624.
 composition as affected by companion crop, (26) 617.
 economic value, treatise, (37) 28.
 nodule bacteria of, (32) 727.
 seedling structure in, (28) 38.
 serological study, (31) 733.
 specialization of nodule bacteria of, (29) 733.
 tannin content, (30) 227.
 treatise, (31) 523.
- Leguminous**—
 cover crops for Guam, (40) 328.
 crops for northern Wisconsin, (28) 738.
 plants—
 and cereals, associative growth, (28) 720.
 as green manure, (37) 320.
 assimilation of nitrogen by, (30) 435; (31) 131, 523.
 breeding experiments, (29) 138, 139; (31) 830.
 classification of varieties, (27) 31.
 culture, (26) 830; (32) 430.
 plants, culture—
 continuous, (31) 226.
 experiments, (27) 32; (29) 631; (30) 828; (31) 628, 733; (37) 330.
 in Brazil, (29) 428.
 India, (29) 736.
 Mexico, (32) 131.
 North Carolina, (31) 132.
 plants, effect on—
 associated nonlegumes, (37) 438.
 nitrogen content of soils, (31) 733.
 soil bacteria, (37) 121.
 plants—
 embryology, (30) 633.
 fertilizer experiments, (26) 424, 725; (29) 227; (31) 132, 628, 733; (32) 37.
 fertilizing value, (29) 820; (30) 125; (37) 214.
 fertilizing value of above-ground parts, (31) 320.
 formation of nitrogen by, (26) 7.
 fungicidal treatment, (29) 326, 22.
 growth in acetylene gas, (27) 827.
 illustrated lecture on, (37) 194.
 insects affecting, (27) 155; (32) 754.
 irrigation experiments, (37) 639.
 methods of variety testing, (26) 436.
 new, analyses and feeding value, (29) 467.
 nitrates in, (36) 329.
 nitrogen assimilation by, (29) 326.
 nitrogenous fertilizers for, (37) 134.
 notes, (26) 882.
 pollination experiments, (37) 734.
 potash fertilizers for, (32) 228.
 production in New York, (39) 532.
 root systems of, (31) 830.
 root tubercles, *see* Root tubercles.
 seed color variation in, (37) 334.
 treatise, (32) 432.
 tubercle bacteria of, (26) 824.
 value in agriculture, (36) 635.
 varieties, (29) 138, 427, 631; (30) 525, 828; (31) 524, 628, 733; (32) 37.
 seeds, germination tests, (36) 437.
 seeds, hard, germinability, (34) 225.
- Legumins**—
 in peas, (40) 607.
 lysin content, (31) 559.
- Leidyana tinei** n.sp., description, (39) 659.
- Leidognathus morsitans**—
 n.sp., description, (35) 263.
 notes, (37) 360.
- Leiomerus granicollis** n.sp., description, (37) 58.
- Leishmania**—
 donovani, development in mosquitoes, (26) 656.
 photomicrographs of, (29) 478.
 relation to *Pulex serraticeps*, (28) 185.
- Leishmaniasis**—
 in Yucatan, (27) 782.
 induced development of, (33) 862.
 notes, (35) 75, 464.
 transmission by fleas, (36) 654.
- Leishmanioses**, monograph (39) 683.
- Lema melanopus**—
 life history and control, (34) 857.
 notes, (31) 654.

Lemon—

- bark blotch, notes, (31) 244.
 - black pit, description, (29) 650.
 - black pit, studies, (30) 652.
 - brown rot gum disease, studies, (33) 55.
 - brown rot, notes, (37) 656.
 - cottony rot, notes, (36) 452.
 - cottony rot, studies, (34) 749.
 - curing rooms, humidifier for, (36) 842.
 - die-back, cause, (31) 450.
 - diseases, notes, (39) 753.
 - diseases, investigations, (32) 238.
 - diseases, notes, (29) 243.
 - essence, analytical methods and standard for, (30) 558.
 - extract, analyses, (35) 663.
 - extract, methods of analysis, (35) 417.
 - extract, terpeneless, studies, (26) 462.
 - grass oil, constants of, (36) 319.
 - grass oil, production in United States, (36) 538; (37) 546.
 - "green spot," studies, (35) 144.
 - groves, damage by cold, (40) 342.
 - groves, heating, (40) 540.
 - gum disease, notes, (27) 546; (32) 53.
 - gum diseases, treatment, (34) 240.
 - gummosis, causal agents, (30) 51.
 - gummosis in California, (31) 449.
 - gummosis, studies, (33) 550.
 - gummosis, treatment, (39) 758.
 - industry in California, (29) 440.
 - industry in Italy, (28) 437.
 - juice, antiscorbutic factor, (40) 364, 869.
 - juice, osmotic pressure, (28) 262.
 - juice, preparation, (33) 316.
 - mottled leaf, cause, (27) 251.
 - oil adulteration, detection, (26) 312; (27) 207.
 - peel, betanins in, (27) 204.
 - peel, candied, manufacture and analyses, (27) 205.
 - rots, life history and treatment, (28) 245.
 - scab, notes, (31) 539, 645.
 - scab, studies, (36) 353.
 - seeds, agglutinating properties, (31) 774.
 - seeds, notes, (32) 613.
 - skins, analyses, (38) 626.
 - skins, isolation of fat from, (29) 459.
 - sour rot, description, (37) 843.
 - tree, orange-like fruit, (40) 151.
 - wither-tip, notes, (34) 241.
 - yellow, effect on digestion, (26) 68.
- Lemonade sirups, examination, (30) 258.**
- Lemons—**
- and oranges, hybrid between, (33) 441.
 - as source of citric acid and essential oils, (33) 540.
 - asexual reproduction of seeds, (31) 533.
 - bud selection, (40) 151.
 - bud variation in, (36) 537; (37) 345.
 - crown gall affecting, (28) 447.
 - culture, (36) 538.
 - culture experiments, (28) 236; (40) 339.
 - culture in Messina, (35) 448.
 - culture in Texas, (38) 40.
 - curing, (26) 47.
 - decay in, (36) 546.
 - descriptions, (27) 745.
 - enemies of, (28) 352.
 - examination, (36) 319.
 - fertilizer experiments, (32) 233.
 - food plant of purple scale, (26) 756.
 - forced curing of, (26) 641.
 - frozen, changes in, (40) 539.
 - frozen, composition, (34) 365, 502; (36) 416.
 - grafting experiments, (32) 233.
 - immunity to collar rot, (31) 244.
 - improvement by bud selection, (33) 737; (35) 647.
 - insects affecting, (27) 453.
 - jelly from, (34) 207.
 - old, pruning, (39) 243.
 - optimum soil moisture conditions, (37) 834.
 - persistence of style on, (36) 523.
 - protection against frost, (27) 439.
 - rapid curing, (29) 440.
 - ripening processes, studies, (26) 138.
 - shading, (39) 544.
 - spotting of, (35) 50.
 - storage and curing experiments, (36) 741.
 - variability of yield, (38) 744.
 - variations in, (27) 441.

- Lemurs, chromatin bodies in erythrocytes of, (29) 478.**
- Lens esculenta as a green manure, (39) 31.**
- Lentil—**
 - flour, digestibility of protein, (33) 564.
 - seeds, disinfection experiments, (31) 738.
 - seeds, oil content, (27) 716.
 - starch, studies, (31) 828.
- Lentils—**
 - analyses, (28) 463; (29) 569.
 - culture, (30) 335.
 - culture experiments, (28) 735.
 - description and agricultural value, (36) 635.
 - digestibility, (32) 168.
 - Egyptian, notes, (28) 532.
 - fertilizer experiments, (26) 631; (31) 133.
 - fertilizing value, (26) 233.
 - germination as affected by depth of planting, (36) 437.
 - germination as affected by Roentgen rays, (28) 128.
 - insects affecting, (29) 853.
 - phosphorus content, (27) 461.
 - prevention of beriberi by, (28) 761; (31) 762.
 - sprouting capacity relation to antiscorbutic value, (39) 470.
 - varieties, (26) 631; (31) 133.
- Lentinus—**
 - lepidus, notes, (27) 653.
 - spp., pseudosclerotia of, (35) 251.
- Lenzites sepiaria—**
 - effect on greenheart, (34) 56.
 - enzymatic activity, (37) 129.
 - studies, (40) 350.
 - wood decay induced by, (37) 727.
- Leontodon hirtus, description, (38) 642.**
- Leopard moth—**
 - description, (35) 55.
 - injurious to apples, (26) 150.
 - life history and remedies, (28) 253.
 - notes, (26) 856; (28) 57, 351; (30) 455; (34) 755.
 - remedies, (31) 652.
 - studies, (26) 556; (27) 658.
 - wood, notes, (28) 353.
- Lepidiotia—**
 - albohirta, notes, (32) 555.
 - albohirta, remedies, (36) 658.
 - frenchi affecting sugar cane, (38) 864.
 - frenchi, control, (40) 648.
 - spp. in Queensland, (39) 255.
 - stigma, notes, (35) 467.
- Lepidium sativum seeds, germinability, (38) 729.**
- Lepidopria aberrans n.sp., description, (36) 556.**
- Lepidoptera—**
 - as affected by Roentgen rays, (27) 656.
 - catalogue, (28) 252, 253; (39) 557.
 - classification, (35) 464; (38) 160.
 - collecting and preserving, (35) 594; (39) 560.
 - female, at light traps, (39) 560.
 - habits, (35) 756.
 - in and about Truro, Nova Scotia, (35) 853.
 - infesting peach and apple, (40) 756.
 - injurious to conifers, (39) 656.
 - Japanese, life history, (37) 57.
 - new, from Mexico, (39) 465, 561.
 - new genus allied to Leucoptera, (40) 757.
 - new, of Antilles, (34) 64.
 - new, of Mexico, (34) 64, 855.
 - new, of North America, (37) 564.
 - of Hawaii, (34) 556; (38) 557.
 - India, (35) 358.
 - Isle of Pines, (37) 158.
 - North America, (28) 253.
 - North America, check-list, (37) 563.
 - Panama Canal Zone, (34) 855.
 - Yale-Dominican expedition, (34) 855.
 - olfactory organs of, (38) 160.
 - overwintering pupae of, (26) 656.
 - parasites of, (39) 468.
 - scent organs, (27) 558.
 - taxonomic value of larval characters, (36) 254.
- Lepidopterology, treatise, (26) 348, 455; (28) 453; (35) 358.**
- Lepidopterous larvae—**
 - aerostatic hairs of, (30) 55
 - classification, (35) 258.
 - hypopharynx of, (34) 553.
 - of Japan, (40) 456.
 - of Mexico, (38) 765.

- Lepidopus caudatus*, analyses, (25) 459.
- Lepidosaphes*—
alba, notes, (28) 855.
beckii, see *Purple scale*.
ficus in California, (37) 563.
gloveri, see *Glover's scale*.
lasianthi, notes, (28) 754.
newsteadi, notes, (35) 54.
olivina, n.s.p., description, (32) 449.
spp., notes, (26) 757.
ulmi, see *Oyster-shell scale*.
- Lepidoscelio viatrix*—
 n.s.p., description, (38) 63.
 notes, (40) 459.
- Lepiota*—
procera, prevalence in South Africa, (29) 461.
spp., effect on vegetation, (38) 222.
- Lepisma saccharina*, life history and parasites, (35) 657.
- Leptrosy*—
bacillus, dissemination by house fly, (29) 457.
bacillus, studies, (33) 178, 771.
 in rats, (27) 754; (29) 651.
 relation to bedbugs, (31) 550.
 relation to flies, (31) 851.
 relation to head lice, (27) 858.
 transmission, (26) 758; (36) 554.
- Leptinillus validus*, parasitism, (31) 60.
- Leptinotarsa*—
deceimlineata, see *Potato beetle*, Colorado.
 evolution in, (40) 860.
- Leptinus testaceus*, parasitism, (31) 60.
- Leptobyrsa*—
explanata, notes, (32) 550; (36) 656.
explanata, studies, (34) 451.
rhododendri, notes, (32) 550; (37) 563; (40) 753.
- Leptocarydium alopecuroides*—
 analyses, (36) 334.
 studies, (38) 66.
- Leptocera sylvatica* in North America, (35) 759.
- Leptochloa*—
chinensis, notes, (26) 362.
virgata, culture in Hawaii, (32) 729.
- Leptocoris varicornis*, notes, (33) 856; (38) 257; (40) 261.
- Leptodictya tabida*, notes, (29) 353, 357.
- Leptoglossus*—
balteatus, notes, (40) 165.
membranaceus, notes, (27) 454; (32) 847.
 occurring north of Mexico, (38) 559.
phyllopus on artichoke, (40) 58.
- Leptohylemyia coarctata*—
 control in Kief, (38) 257.
 notes, (31) 852.
- Leptomastix sp.*, life history, (33) 658.
- Leptomys n.g.* and *n.s.p.*, descriptions, (32) 321.
- Leptomyia distinguenda* n.s.p., description, (37) 563.
- Leptops hopei*, notes, (26) 353.
- Leptopsylla musculi*, bionomics of, (31) 353.
- Leptosphaeria*—
cinnamomi n.s.p., description, (27) 149.
coffeicola, notes, (32) 749.
coffeligena, notes, (38) 51.
coniothyrium—
 dissemination by tree crickets, (35) 547.
 notes, (31) 649.
 relation to apple canker, (34) 653.
cucurbitae n.s.p., description, (37) 550.
culmifraga, notes, (36) 541.
herpotrichoides—
 notes, (27) 747, 748; (30) 648, 748; (32) 641;
 (37) 248, 653; (40) 845.
 studies, (34) 244.
napi, notes, (38) 147.
sacchari—
 notes, (26) 445; (29) 345; (36) 846; (37) 553,
 838; (40) 157, 848.
 studies, (38) 851.
spp., notes, (28) 52; (30) 751; (31) 147.
tritici, notes, (32) 843.
- Leptospora*—
icterohaemorrhagiae, see *Spirochaeta ictero-*
haemorrhagiae.
 new genus, notes, (37) 578.
- Leptospora musae*, notes, (27) 50, 449.
- Leptostroma pinastri*, notes, (32) 845.
- Leptostyla*, nearctic, key, (38) 559.
- Leptostylus*—
biustus, notes, (28) 855; (38) 363.
macula, dissemination of chestnut blight by,
 (31) 451.
- Leptostylus*—Continued.
macula, relation to chestnut bark disease, (35) 756.
praemorsus, notes, (31) 58.
- Leptothrips floridensis*, notes, (31) 751.
- Leptothyrium*—
asparagi n.s.p., description, (32) 146.
carpophilum, notes, (35) 550.
caspicum n.s.p., notes, (34) 842.
pomi, notes, (29) 154; (38) 550.
pomi, treatment, (27) 747.
- Leptotrombidium akamushi*—
 n.g., studies, (37) 858.
 relation to *Leptus autumnalis*, (37) 859.
- Leptotypha*, nearctic, key, (38) 559.
- Leptura zebra*, notes, (28) 351; (30) 154.
- Lepturges spermophagus* n.s.p., description, (40) 654.
- Leptus akamushi*, studies, (39) 870.
- Leptus autumnalis*, notes, (37) 859.
- Lepyronia quadrangularis*, life history, (36) 458.
- Lespedeza*, see *Clover*, Japan.
- Leptophonus*, studies, (36) 757.
- Lestremiinae*, studies, (30) 657.
- Letensuo Moor* Experiment Station, report, (27) 723.
- Lettuce*—
anthracnose, studies, (39) 355.
bacterial—
 disease, description, (29) 242.
 diseases, notes, (37) 652.
 diseases, studies, (33) 742; (39) 455.
 rot, investigations, (31) 747.
 stem and leaf disease, (37) 841.
- Botrytis* disease on, (36) 541.
 breeding experiments, (35) 141.
 catalytic fertilizers for, (27) 629.
 culture, (26) 393, 539; (37) 143.
 culture in Arizona, (39) 745.
 culture in greenhouses, (26) 740; (33) 42; (38) 344.
 decay in transit, (35) 444.
 disease in Rio Grande Valley, (36) 450.
 diseases in Michigan, (38) 545.
 diseases, notes, (39) 353.
 diseases, treatment, (39) 52.
 drop, description and treatment, (29) 846.
 drop, notes, (28) 847; (31) 747; (35) 844.
 electroculture experiments, (28) 326; (30) 738.
 fertilizer experiments, (34) 520, 532, 821; (39) 38, 542, 843; (40) 740.
 fertilizer requirements, (26) 818.
 frozen, as affected by rapid thawing, (32) 43.
 germination in mercury vapor light, (30) 827.
 Grand Rapids, improving, (38) 142.
 greenhouse, carbon dioxide for, (39) 38.
 greenhouse, rot of, (36) 359.
 growth as affected by electric light, (28) 228.
 growth in artificial light, (28) 735.
 growth in shade, (29) 130.
 handling and precooling, (32) 234; (38) 444.
 insects affecting, (31) 649; (32) 753.
 leaf rot, notes, (27) 45.
 liming experiments, (39) 221.
 mildew, prevention, (26) 342.
 mulching v. clean culture, (33) 534.
 nitrogen content, (39) 542.
 on acid soils, (39) 115.
 prickly, rust of, (33) 548.
Puccinia disease of, (28) 241.
 purin content, (40) 205.
 radioactive fertilizers for, (35) 628.
 response to carbon dioxide, (40) 820.
 root knot, notes, (36) 349.
 rot, treatment, (28) 446; (39) 249.
Sclerotinia disease of, (29) 646.
Sclerotinia libertiana affecting, (26) 647.
 sclerotinose, studies, (26) 448.
 seed, germination tests, (26) 44.
 seed, production, (38) 142.
 seedlings, damping-off, (37) 651.
 seeds, large v. small, (31) 634.
 sprayed, arsenic on, (38) 55.
 storage experiments, (31) 533.
 typhoid bacilli on, (27) 766.
 varieties, (38) 344.
 variety tests, (39) 745.
 watering, continuous, (37) 543.
 wild, rubber from, (29) 241.
- Leucaena glauca*—
 analyses, (29) 215.
 as green manure for tea, (30) 43.
 as shade for coffee, (34) 535.

- Leucania**—
pseudargyria, notes, (35) 553.
unipuncta, *see* Army worm.
- Leucas pechuelii**, analyses and digestibility, (27) 871; (32) 167.
- Leucaspis**—
japonica, notes, (34) 752; (35) 54.
pini in Argentina, (39) 560.
- Leucin**—
 anhydrid, a protein-hydrolysis product, (36) 804.
 as source of ammonia, (29) 723.
 assimilation by plants, (26) 32.
 conversion into glycocoll, (29) 64.
 effect on ammonia production and use in killed plants, (28) 328.
 effect on baking quality of flour, (26) 356; (30) 555.
 in sugar cane juice, (30) 15.
 ingestion, effect on metabolism, (28) 867.
 1-Leucin in sweet clover silage, (37) 802.
- Leucite**—
 as source of potash, (26) 426; (27) 23, 323; (30) 216, 221; (34) 328; (39) 218.
 decomposition by soil bacteria and yeast, (31) 121.
 effect on activity of soil bacteria, (31) 821.
 fertilizing value, (27) 725; (29) 319.
 solubility in sulphurous acid, (36) 414.
- Leucitic lavas**, Italian, as source of potash, (39) 219.
- Leucocyte**—
 dissolving immune bodies, (30) 477.
 ferments and antiferments, notes, (32) 78.
 tube, description, (31) 209.
- Leucocytes**—
 as affected by fasting, (30) 866.
 bactericidal properties, (26) 175; (27) 882.
 bactericidal substances, (27) 181.
 blood and exudate, phagocytic activity, (29) 881.
 counting, (26) 779.
 counting in milk, (29) 208.
 effect on reaction of milk, (28) 680.
 exudate, effect on antibody formation, (26) 278.
 fixation of tetanus antitoxin by (26) 177.
 fixation of toxins by, (34) 275.
 from immunized donkeys, phagocytic power, (28) 677.
 germicidal properties, (26) 883.
 in milk, (26) 370; (29) 473; (31) 372; (33) 382.
 of blood and pus, new enzyme of, (38) 583.
 of human blood, ferment index, (26) 83.
 protective value in animal diseases, (32) 876.
 rôle in immunity, (33) 477.
 rôle in metabolism of carbohydrates, (36) 265.
- Leucocyte**—
 bacteriolysin, relation to body fluids, (31) 178.
 extract, therapeutic value, (29) 500; (31) 377.
 reaction in infection and intoxication, (26) 83.
- Leucocytosis**, digestive, studies, (40) 71.
- Leucocythoerapy**, notes, (38) 588.
- Leucotoxozoon**—
anatis, notes, (33) 483; (37) 483.
piroplasmoides, notes, (27) 188.
struthionis, notes, (28) 683.
- Leuconostoc mesenteroides**, notes, (29) 153.
- Leucophaea surinamensis**, notes, (39) 761.
- Leucopholis rorida**, notes, (35) 467.
- Leucopis**—
bella, notes, (29) 455.
grandicornis, notes, (27) 656.
- Leucoplasts**, primordia of, (39) 332.
- Leucoptera**—
coffeella, *see* Coffee leaf miner.
 new genus allied to, (40) 757.
- Leucosin**, determination in flour, (27) 498.
- Leucosphaera bainesii**, analyses and digestibility, (27) 871; (32) 167.
- Leucotactic processes** in the animal body, (33) 476.
- Leucotermes**—*see also* *Termes*.
flavipes notes, (35) 54; (38) 157.
lucifugus, notes, (27) 555.
 (Reticulitermes) *speratus* n.s.p., description, (35) 253.
 sp., remedies, (36) 355.
 spp., investigations, (32) 755.
- Leukemia**—
 and pseudoleukemia in fowls, (38) 179.
 in fowls, studies, (29) 285; (35) 283; (36) 483.
 radium treatment of, effect on metabolism, (40) 566.
 transmission by bedbugs, (31) 550.
- Levan**, occurrence in sugar, (28) 504.
- Levees**—
 building by hydraulic dredge, (32) 589.
 building in California, (30) 289.
 construction and maintenance, (32) 187.
 effect on river stages, (26) 417.
 enlargement, methods and cost, (33) 780.
 in southeastern Missouri, (33) 780.
 laws in Indiana, (35) 787.
 tables for level section, (31) 354.
- Levoglucofuranose**, possible formulas, (40) 110.
- Levulosans**, hydrolysis of, (31) 314.
- Levulose**—
 absorption by plants, (27) 635.
 absorption in the intestines, (28) 763.
 as protective agent for enzymes, (26) 504.
 determination in presence of glucose, (37) 507.
 heat of combustion, (26) 160.
 humification, (38) 26.
 in Fucoidae, (29) 566.
 in grape leaves, (27) 731.
 preparation, (29) 803.
 reducing power, (35) 416.
- Levulosis** in trypanosomiasis, (30) 381.
- Liautard, A. F.**, biographical sketch, (39) 200.
- Libertella** sp. on pimento, (39) 849.
- Libocedrus decurrens**, commercial importance, (38) 751.
- Libraries**, rural, notes, (30) 496.
- Licaria guianensis**, studies, (30) 347.
- Lice**—
 and nits, destruction in clothing and blankets, (38) 839.
 and their relation to disease, (37) 762.
 as affected by heat, (40) 547.
 as carriers of swine fever, (31) 884.
 asymmetrical bird, notes, (38) 56.
 bird biting, distribution and species forming among, (29) 53.
 biting and sucking, notes, (29) 454.
 biting, remedies, (39) 360.
 body and head, life history and habits, (38) 159.
 body, biology, (35) 460.
 body, destruction with cyanid gas, (36) 456.
 body, remedies, (34) 356, 854; (35) 854; (36) 551.
 borne diseases, prevention, (40) 456.
 control by laundrying, (40) 555, 551.
 destruction, (35) 94.
 destruction by heat, (36) 356.
 destruction on hogs, (37) 882.
 disease transmission by, (40) 550.
 head, relation to leprosy, (27) 858.
 on cattle, (40) 651.
 hogs, (40) 652.
 horses, control, (40) 684.
 poultry, (32) 481; (35) 183; (37) 357; (40) 754.
 relation to recurrent fever, (29) 479.
 relation to trench fever, (39) 658.
 remedies, (33) 98; (36) 853; (39) 360, 864; (40) 61, 165, 631, 752.
 studies, (37) 850; (40) 355.
 transmission of—
 poliomyelitis by, (28) 753.
 Trypanosoma evansi by, (28) 756.
 typhus fever by, (26) 759; (33) 857.
- Lichens**—
 as food for animals and men, (34) 164.
 destruction on fruit trees, (33) 857.
 heat development of, (31) 323.
 of Great Britain, treatise (27) 25.
- Licorice**—
Rhizoctonia disease of, (35) 48.
 wild, geographical distribution, (26) 335.
- Lidopus** n.g. and n.s.p., description, (38) 560.
- Liebig, J. von**, biographical sketch, (32) 109.
- Life**—
 insurance for farmers, (27) 794.
 mechanistic conception, (27) 368.
 mechanistic conception, treatise, (28) 875.
 nature, origin, and maintenance, (27) 869.
 origin of, (30) 129.
 zones of New Mexico, (29) 755.
 zones of Wyoming, (38) 255.
- Light**—*see also* *Sunlight*.
 action on living organisms, (36) 224.
 action on organic compounds, (40) 425, 426.
 and mass impulse, laws concerning, (35) 431.
 as factor in forest growth, (37) 45.
 as production factor in forestry, (26) 745.
 colored, effect on plants, (29) 526.

Light—Continued.

- determination of intensity, (29) 408.
- effect on—
 - beet seeds, (29) 332.
 - carbon dioxide production in plants, (29) 324.
 - chlorophyll in algae, (26) 431.
 - chlorophyll production, (28) 731.
 - curing of tobacco, (38) 239.
 - crop yields, (30) 135.
 - development of sugar beets, (27) 642.
 - elimination of oxygen, (28) 801.
 - enzymes, (28) 110.
 - etiolated leaves, (33) 826.
 - flowering of plants, (27) 827.
 - formation and germinability of seeds, (29) 526.
 - germination of seeds, (26) 131, 820, 821; (27) 220, 243, 444; (28) 327, 826; (29) 421, 525, 828, 836; (30) 522, 531; (31) 222, 227, 323; (35) 222, 523, 632.
 - germination of Sphaeropsidales, (38) 225.
 - germination of tobacco, (38) 127.
 - growth and development of trees, (32) 144.
 - growth of cucumbers, (30) 142.
 - growth of elms, (28) 344.
 - growth of sugar beets, (28) 825.
 - metabolism, (29) 567.
 - metabolism in white dogs, (31) 563.
 - plant growth, (27) 521; (28) 227; (29) 421, 526; (33) 128; (34) 223; (35) 129.
 - quality of oak wood, (27) 542.
 - sugar formation in beets, (30) 234.
 - toxicity of magnesium nitrate, (38) 224.
 - transpiration of leaves, (28) 529; (31) 222.
 - transpiration of succulent plants, (26) 430.
 - tubercle bacilli, (33) 282.
 - woody plant seedlings, (30) 430.
- extinction in atmosphere in region of the ultra-violet, (32) 810.
- factors affecting in greenhouses, (29) 741.
- intensities, measurement, (37) 821.
- intensity and substratum as related to germination, (33) 826.
- intensity, determination, (26) 532.
- leaf injury or loss due to, (35) 243.
- measurement, (38) 629.
- measurements in forests, (30) 45.
- measurements in spruce stands, (26) 745.
- measuring chemical intensity, (28) 37.
- precipitation of iron by, (26) 326.
- precipitation, relation to alkali, (27) 816.
- rays, effect on protoplasmic streaming, (35) 130.
- relation to—
 - chlorophyll, (31) 127, 222; (33) 29.
 - formation of essential oil, (33) 726.
 - formation of formaldehyde, (29) 132.
 - leaf fall, (27) 221.
 - plant growth, (36) 327.
 - plant succession, (29) 218.
 - powdery mildews, (30) 747; (33) 244.
 - tree growth, (36) 242.
- requirements of germinating seeds, (33) 826.
- requirements of plants, studies, (27) 221., rôle in vegetation, (27) 330.
- sensitivity of foliar organs, (37) 222.
- sky, polarization, (38) 812.
- stimuli, transmission in Avena seedlings, (28) 529.

Lighting—

- handbook (31) 387.
- installations for residences, (31) 293.
- plans for farms, (31) 185.
- plants, gasoline, notes, (28) 291.
- systems for country homes, (36) 491.

Lightning—

- at Mount Wilson observatory, (31) 615.
- ball, on Puy de Dome, (36) 419.
- conductors, notes, (28) 185.
- conductors, studies (28) 788.
- crushing of copper tube by, (34) 118.
- damage near San Francisco, (29) 121.
- danger of various trees, (27) 444.
- discharge, phenomena of, (26) 214.
- effect on coconut palms, (35) 250.
- flashes, notes, (32) 210.
- injury to—
 - citrus trees, (40) 645.
 - cotton and tomato plants, (33) 321.
 - grapevines, (40) 645.
 - herbaceous plants, (40) 645.

Lightning—Continued.

- injury to—continued.
 - kale, (38) 149.
 - potatoes and cotton, (33) 345.
 - sugar cane, (38) 250.
 - protection against, (29) 88; (33) 321; (34) 416; (38) 15.
 - relation to forest fires, (28) 50; (37) 512.
 - rods, efficacy, (34) 416.
 - rods, notes, (31) 572; (35) 890.
 - stroke, peculiar, (27) 414.
 - strokes, data on, (34) 510.
- Ligniera—
- development of fungi, (27) 46.
 - isoetis n.sp., description, (40) 249.
 - n.spp., descriptions, (31) 145.
- Lignin—
- formyl and acetyl groups in, (27) 310.
 - humification, (38) 26.
 - liquor as binder for roads, (33) 688.
- Lignocellulose—
- and animal assimilation, notes, (29) 65.
 - as affected by ozone, (30) 711.
- Lignoceric acid from rotten oak wood, (36) 502.
- Lignum nephriticum mexicanum, source of, (33) 740.
- Lignum vitae substitutes, (40) 640.
- Ligula simplicissima affecting waterfowl, (29) 784.
- Ligustrum vulgare, formation of fatty acids in, (26) 801.
- Ligyris—
- gibbosus, life history, (37) 567.
 - rugiceps, see Sugar-cane beetle.
 - tumulosus, notes, (36) 753.
- Lilac—
- borer, notes, (28) 155.
 - bud sport on, (39) 244.
 - disease, description and treatment, (29) 249.
 - leaf roll, description, (30) 849.
 - trunk disease, notes, (31) 750.
- Lilacs—
- as affected by tarring roads, (26) 432.
 - culture, (35) 450.
 - forcing experiments, (28) 435.
 - forcing with radium, (27) 438.
 - history and propagation, (35) 345.
- Lilies—
- culture, (35) 450.
 - Easter, aerial bulbs on stems, (38) 446.
 - handbook, (26) 47.
 - nectar secretion, (37) 633.
 - treatise, (29) 341.
- Lilium croceum, carotinoid content, (31) 803.
- Lily pollen, longevity, (38) 446.
- Lily-of-the-valley—
- culture, (26) 239.
 - fertilizer experiments, (26) 239.
 - forcing experiments, (34) 835.
 - fungus disease, (27) 252.
 - nematodes affecting, (31) 56.
- Limacinula—
- caucasica n.sp., description, (36) 245.
 - javanica, notes, (28) 241.
- Limax—
- flavus, notes, (40) 56.
 - maximus, biology and remedies, (40) 55.
- Limber neck in fowls, (40) 176.
- Lime—see also Liming.
- absorbed, determination in soils, (30) 215.
 - agricultural—
 - analyses, (39) 329.
 - degree of fineness, (30) 222.
 - determining value, (40) 815.
 - air-slaked, for alfalfa, (37) 34.
 - analyses, (26) 714; (27) 327; (28) 326, 626, 841; (29) 119, 520; (31) 122, 424; (32) 520; (33) 820, 821; (34) 426, 726; (35) 128, 631, 728; (36) 123, 821; (37) 219, 428, 818; (38) 521; (40) 517.
 - analyses and use, (28) 726.
 - and limestone, analyses, (39) 121.
 - and magnesia requirements of plants, (28) 820.
 - and marl, comparison, (40) 321.
 - application, (36) 123.
 - arsenite, analyses, (26) 65.
 - as factor in soil fertility, (40) 300.
 - as fertilizer, (32) 126, 127.
 - as neutralizer in dairy products, (29) 798.
 - as top dressing for pastures, (29) 632.
 - barrel act, Federal, (37) 723.
 - barrels, standard for, (35) 598.

Lime—Continued.

- bread, description, (30) 859.
- burning, (29) 590.
- burnt, fertilizing value, (30) 822; (39) 626.
- burnt shell, fertilizing value, (33) 131.
- burnt, storing, (36) 123.
- carbonate from causticizing plant, analyses and fertilizing value, (31) 125.
- caustic, effect on soil fertility, (32) 399.
- caustic, injury to plant growth, (35) 429.
- caustic, v. limestone, (30) 822.
- chemistry of, (28) 223; (30) 822.
- chlorinated, as a soil ameliorant, (30) 140, 822.
- compounds, analyses, (40), 517.
- compounds in soils, (36) 322.
- cost in Connecticut, (28) 626.
- cost of, (34) 520.
- cost of burning, (40) 816.
- crushing on the farm, (36) 821, 822.
- cyanid as winter spray for fruits, (30) 641.
- deterioration on keeping, (39) 729.
- determination—
 - as calcium sulphate, (38) 312.
 - in ash of cereals, (26) 807.
 - cow feces, (30) 12.
 - peat soils, (39) 504.
 - plant ashes, (29) 609.
 - soils, (27) 514; (36) 299, 611.
- different forms, comparison, (40) 125, 322.
- diseases, notes, (28) 545.
- displacement by water in leaves, (29) 219.
- distribution and loss in soils, (29) 128.
- distribution in loam soils, (31) 618.
- effect on—
 - action of phosphates, (35) 326.
 - alfalfa, (28) 737, 830.
 - alkali tolerance of wheat seedlings, (27) 500; (29) 322.
 - ammonia fixing power of soils, (27) 322.
 - ammonifying and nitrifying efficiency of soils, (32) 818.
 - apples, (29) 438.
- effect on availability of—
 - nitrogen, (28) 724.
 - phosphates, (26) 427; (28) 223.
 - phosphoric acid, (26) 321.
 - soil organic matter, (31) 124.
 - soil potash, (36) 519.
- effect on—
 - bacterial activity of soils, (34) 623.
 - basic slag, (39) 25.
 - cement mortar, (40) 786.
 - clover, (28) 136; (33) 333.
 - composition of crimson clover, (34) 132.
 - cranberries, (30) 143.
 - finger-and-toe disease, (26) 630.
 - grapes, (31) 339; (34) 221.
 - grass lands (30) 133, 134.
 - growth of conifers, (33) 739.
 - humus content of soils, (38) 814.
 - inoculated soil, (39) 519.
 - loss of plant food from soils, (35) 216, 623.
 - lupines, (35) 441.
 - maturity of cotton, (31) 40.
 - moor soils, (29) 823; (34) 18.
 - nitrification, (26) 721; (33) 620.
 - nitrification and bacterial content of acid soils, (40) 620.
 - nitrification in soils, (28) 217; (29) 21, 622.
 - nitrogen content of soy beans, (28) 721.
 - organic compounds in soils, (26) 322.
 - peat soils, (30) 120.
 - phosphate reversion, (39) 521.
 - plant growth, (32) 622; (36) 212.
 - potash absorption, (39) 728.
 - soil acidity, (38) 620; (40) 124.
 - soil aldehydes, (36) 424.
 - soil bacteria, (27) 720.
 - soil fertility, (37) 219.
 - soil granulation; (26) 420.
 - soil nitrogen, (26) 320.
 - soils, (27) 218; (28) 820; (29) 210; (30) 127, 220; (31) 220; (35) 429, 727.
 - soy beans, (39) 741.
 - strawberries, (34) 150; (38) 639.
 - strength of cement mortars, (36) 286.
 - sulphate of ammonia, (26) 320.
 - sulphur content of soils, (38) 327.
 - superphosphate, (39) 119.
 - tea seedlings, (33) 842.

Lime—Continued.

- effect on—continued.
 - utilization of nitrogen in acid soils, (36) 819.
 - vegetation, (26) 325.
 - water-soluble nutrients in soils, (40) 124.
 - yield and composition of oats, (26) 429.
 - yield and nitrogen content of corn, (35) 816.
 - yield of alfalfa, (31) 228.
 - yield of apples, (38) 244.
 - yield of cotton, (38) 534, 816.
 - yield of peaches, (33) 242.
- examination, sampling, and guaranty of, (33) 110.
- feed, analyses, (26) 267; (27) 570.
- feed, methods of analysis, (29) 311; (31) 806.
- feeding value, (28) 265.
- fertilizing value, (26) 630, 725; (27) 32, 429, 436, 638, 639, 831, 835; (28) 123, 124, 520, 820; (30) 25, 519, 526; (31) 424; (33) 227; (34) 129, 132, 520, 621; (35) 22, 323, 535, 629; (36) 122; (37) 214, 626, 733; (38) 133, 217, 230, 422.
- for acid soils, (32) 812.
- Alabama soils, (27) 24.
- alfalfa, (34) 138.
- cotton, (31) 630.
- cranberry bogs, (31) 442.
- flax, (32) 136.
- fowls, (31) 569.
- Missouri soils, (26) 434; (33) 212, 213, 214, 215.
- orchard soils, (36) 724.
- South Carolina soils, (28) 726.
- forms for grassland, (40) 824.
- from manufacturing wastes, (38) 22.
- grinding law in Maryland, (37) 219.
- hydrated—
 - effect on mortar and concrete, (30) 889; (31) 387, 687.
 - for concrete roads, (34) 787; (35) 86, 291.
 - fungicidal value, (39) 548.
 - tests and uses, (33) 487.
- importance in plant and animal nutrition, (34) 662.
- in New Zealand soils, (35) 715.
- phosphatic slag, (26) 34, 205.
- road concrete, (40) 788.
- soil as affected by kainit, (33) 326.
- industry in United States, (32) 324, 424.
- injurious to fish, (29) 821.
- injurious to small fruits, (29) 40.
- insecticidal value, (37) 262.
- inspection in Massachusetts, (27) 327.
- inspection in Ohio, (36) 123.
- inspection in Pennsylvania, (37) 220, 818.
- inspection law in Maryland, (27) 727; (33) 820; (34) 426.
- long-continued use, (34) 128, 132.
- loss from soils, (26) 620; (27) 321; (29) 211; (35) 813.
- metabolism, relation to sexual glands, (28) 370.
- mixing with flowers of sulphur, (34) 51.
- mud, fertilizing value, (26) 630.
- neutralizer, detection in dairy products, (37) 313.
- niter, *see* Calcium nitrate.
- nitrate as winter spray for fruits, (30) 641.
- nitrogen, *see* Calcium cyanamid.
- notes, (27) 326; (30) 27.
- of feeding stuffs, digestibility, (40) 769.
- of Fiji, analyses, (36) 319.
- of Thomas slag, efficiency, (29) 823.
- oils, expressed and distilled, notes, (30) 116.
- phosphate, basic, analyses, (39) 222.
- potash, fertilizing value, (26) 526.
- potash, preparation and use, (27) 326.
- production and use in United States, (31) 125; (36) 123.
- production in 1913, (31) 726.
- production in 1917, (39) 329; (40) 26.
- production in United States, (28) 223.
- products, analyses, (30) 822.
- products, waste, as fertilizer, (35) 24.
- refuse, analyses, (32) 32.
- relation to—
 - cold resistance in plants, (39) 525.
 - decomposition of organic matter in soil, (39) 127.
 - dry spot of cereals, (29) 46.
 - grape chlorosis, (26) 344.
 - magnesia in soils, (36) 519.

Lime—Continued.

- removal from soils by smelter fumes, (28) 623; (31) 322.
 - requirement of—
 - animals, (29) 65; (31) 864.
 - lupines, (33) 133.
 - man, (30) 367.
 - plants, (27) 824; (28) 820; (39) 514.
 - soils, *see* Soils, lime requirement.
 - resorption from pasteurized milk, (27) 282.
 - resources of Pennsylvania, (34) 133.
 - review of investigations, (27) 128.
 - rock, ground, fertilizing value, (36) 425.
 - salts, effect on solubility of phonolite, (29) 319.
 - siliceous, use as fertilizer, (29) 520; (30) 127, 822.
 - slaked, fertilizing value, (26) 817; (34) 725.
 - slaking experiments, (36) 123.
 - soil concretions due to, (32) 215.
 - solubility in epidote, (40) 812.
 - sources for plants, (32) 622.
 - sterilization of—
 - soils by, (29) 730; (30) 399; (31) 519; (32) 32.
 - water by, (29) 814; (34) 286.
 - trass, zeolitic properties, (29) 518.
 - trees, *see* Limes.
 - use, (32) 624, 723.
 - use against finger-and-toe disease, (26) 342; (29) 752; (31) 218, 842; (35) 522.
 - use against mosses, (29) 741.
 - use in agriculture, (26) 34; (28) 223; (32) 218, 424; (33) 26; (34) 27, 426; (35) 220; (36) 429, 723; (37) 218, 219, 629; (39) 724.
 - use in greenhouses, (33) 42.
 - use in Scotland, (31) 424.
 - use on—
 - acid soils, (36) 514.
 - calcareous sugar-cane soils, (37) 723.
 - California soils, (30) 627.
 - Iowa soils, (32) 212; (37) 24.
 - Missouri soils, (37) 428.
 - moor soils, (38) 132.
 - pastures, (26) 436.
 - peat soils, (37) 134, 135.
 - soils rich in magnesia, (35) 324.
 - swamp land, (29) 223.
 - Tennessee soils, (39) 120.
 - the farm, (26) 899.
 - use with—
 - barnyard manure, (34) 128.
 - blackleaf, (38) 40, 159.
 - nitrogenous fertilizers, (35) 124; (39) 623, 624.
 - phosphates, (33) 723.
 - uses and functions in soils, (40) 517.
 - valuation, (38) 804.
 - value in the diet, (29) 664.
 - wash, effect on transpiration of potatoes, (31) 825.
 - washes, winter application, (34) 253; (37) 759.
 - waste, from acetylene manufacture, (34) 521; (40) 725.
 - water as an egg preservative, (32) 470.
- Limekiln—**
- ashes, analyses, (28) 626; (32) 424; (34) 521.
 - refuse, analyses, (38) 626.
 - rotary, description, (37) 24.
- Lime-magnesia—**
- fertilizers, tests, (30) 519.
- ratio—**
- as affected by concentration, (28) 730.
 - effect on nitrogen transformation in soil, (32) 720.
 - effect on plants, (26) 35; (27) 824; (29) 520; (30) 27.
 - in grain culture, (30) 519.
 - in soil amendments, (34) 821.
 - in soils, (26) 723; (28) 425, 812, 820; (29) 730; (31) 31, 218, 623; (32) 324; (36) 326.
 - review of investigations, (32) 218.
- Limes—**
- antiscorbutic value, (40) 565.
 - as source of citric acid and essential oils, (33) 540.
 - black root disease of, (32) 646.
 - budding on sour orange stock, (34) 438.
 - collar rot of, (37) 838.
 - crown gall affecting, (28) 447.
 - culture, (36) 445.
 - culture in Island of Dominica, (31) 639.
 - culture in West Indies, (29) 745; (33) 540.

Limes—Continued.

- descriptions of species, (27) 745.
 - die-back of, (34) 750; (37) 556.
 - diseases, (34) 545.
 - diseases and insect pests of, (36) 851.
 - diseases in Dominica, (35) 50.
 - diseases in West Indies, (37) 452.
 - fertilizer experiments, (32) 46; (34) 438; (36) 141; (37) 648.
 - fungus diseases of, (27) 445; (33) 150.
 - gall or knot of, (34) 349.
 - host plant of fruit fly, (26) 758.
 - industry in West Indies, (34) 438.
 - insects affecting, (30) 752; (31) 58; (33) 154; (39) 556, 862, 864; (40) 453.
 - juice of—
 - concentration by freezing, (36) 808.
 - concentration experiments, (30) 117.
 - examination, (33) 66.
 - extraction by milling, (30) 117.
 - nitrogenous constituents of, (29) 161.
 - market disease, (39) 553.
 - new species from Australia, (34) 235.
 - root diseases, (26) 245; (28) 149; (31) 55; (36) 846; (37) 454.
 - silver scurf of, notes, (31) 746.
 - twig borer on, (28) 858.
 - winter moth on, (34) 752; (35) 54; (36) 549.
- Limestone—**
- action on acid soils, (40) 423.
 - analyses, (26) 127, 715; (27) 327; (28) 626; (30) 822; (31) 122; (32) 424, 520; (33) 723, 820, 821; (35) 430; (36) 27; (38) 626; (39) 430.
 - analyses and use, (28) 726.
 - composition, (37) 195.
 - decomposition and utilization, (37) 219.
 - degree of fineness, (39) 25, 220, 222; (40) 423, 720.
 - deposits in South Carolina, (34) 725.
 - deposits in Victoria, (28) 223.
 - dolomitic v. high-calcium, (40) 423.
 - effect of fineness, (34) 133, 821; (37) 428; (38) 21, 220.
 - effect on—
 - carbon dioxide content of soil air, (39) 516.
 - clover and sorrel, (35) 529.
 - plant growth, (35) 726.
 - soil bacteria, (26) 428; (38) 818.
 - fertilizing value, (26) 817; (28) 737; (38) 124.
 - for Kentucky soils, (35) 122.
 - peaty pastures, (36) 740.
 - soil improvement, (35) 727.
 - southern soils, (31) 322.
 - from North Island, New Zealand, analyses, (35) 24.
- ground—**
- analyses, (31) 424, 823; (34) 521.
 - analyses and use, (37) 523.
 - availability in relation to fineness, (35) 631.
 - diffusion in soils, (29) 128.
 - effect on composition of barley, (34) 132.
 - effect on decomposition of green manure, (34) 130.
 - fertilizing value, (27) 422; (29) 224; (30) 822; (31) 731; (33) 227; (34) 132, 725; (36) 122.
 - for acid silt and clay soils, (37) 420.
 - for acid soils, (33) 26, 220.
 - notes, (34) 294, 796.
 - use on soils, (37) 818.
- home grinding, (39) 120.**
- injurious to citrus fruits, (37) 656; (39) 458.
 - inspection, (40) 622.
 - loss from soils, (40) 423.
 - magnesian and nonmagnesian, comparison, (32) 518.
 - magnesium v. calcium, (39) 127, 220, 622, 626; (40) 125.
 - marls and shells, analyses, (36) 821.
 - media, growth of sorrel in, (40) 40.
 - methods of analysis, (34) 609.
 - mixing with superphosphate, (34) 26.
 - of Canterbury Province, New Zealand, (36) 220.
 - of New York, (34) 725.
 - of Ohio, analyses, (39) 521.
 - of Queensland, analyses, (30) 421.
 - resources of Michigan, (37) 428.
 - resources of Missouri, (37) 428.
 - resources of Pennsylvania, (38) 22; (40) 816.

Limestone—Continued.

- tester, description, (34) 806; (36) 614.
- tests, (37) 428.
- use with green manures, (39) 622.

Lime-sulphur—

- dips, field test for, (32) 612.
- injury, investigations, (30) 152.
- lead arsenate mixture, studies, (29) 802.
- mixture—

- analyses, (26) 715; (27) 344, 441; (29) 42, 235; (31) 49, 142; (32) 169; (33) 47; (34) 436, 639; (36) 113; (37) 243; (38) 643; (39) 240.
- as ovicide for codling moth, (28) 857.
- as summer spray, (26) 741; (29) 146; (33) 46.
- causing apple drop, (40) 57.
- chemistry of, (26) 405; (31) 407; (36) 311.
- composition, (31) 439; (32) 410; (33) 613; (39) 508.
- composition and evaluation, (35) 112.
- concentrate, preparation, (33) 154.
- dilution table for, (31) 636.
- dry, (39) 349.

mixture, effect on—

- apples, (28) 47.
- peaches, (29) 640.
- potatoes, (27) 151, 237; (28) 433.
- solubility of lead arsenate, (33) 710.
- transpiration of potatoes, (31) 825.

mixture—

- for potatoes, (33) 40.
- for San José scale, (39) 465.
- from industrial wastes, (38) 757.
- fungicidal value, (27) 253; (28) 652; (31) 439, 749; (32) 158; (33) 648; (35) 39, 149, 151, 447; (37) 447; (39) 548, 652; (40) 251, 253.
- home preparation, (29) 543.
- injurious effects, (31) 439.
- injurious ingredients of, (29) 41.
- insecticidal value, (27) 755; (28) 658; (31) 409; (32) 846; (37) 53; (40) 162, 163.
- manufacture, effect on eyesight, (30) 16, 618.
- methods of analysis, (29) 797; (33) 613; (34) 806; (35) 207.
- microorganisms in, (31) 205.
- notes, (27) 757.
- preparation, (26) 539; (28) 841; (40) 801.
- preparation and use, (27) 39, 242; (28) 247, 639; (31) 541, 740; (32) 338; (33) 242; (37) 143, 544; (38) 844.
- properties, (28) 639.
- self-bolled, fungicidal value, (34) 146.
- sludge, analyses, (32) 520.
- substitute for, (37) 251.
- tests, (27) 439, 440; (28) 48; (35) 549.
- use against apple scab, (28) 448; (31) 346.
- against citrus insects, (31) 549.
- against gooseberry mildew, (29) 249.
- against larch moth, (33) 859.
- in seed treatment, (40) 346.
- of flour paste in, (29) 459.
- with lead arsenate, (31) 108; (38) 258; (39) 251.
- with nicotine, (40) 162.
- with oil emulsions, (40) 453, 454.
- v. Bordeaux mixture for apple diseases, (26) 45.
- v. Bordeaux for potatoes, (35) 831.
- valuation, (33) 252.
- value and use, (39) 348.

Lime-tin, notes, (30) 116.

Lime-water—

- addition to milk, (36) 559.
- effect on seed germination, (26) 131.
- neutralizing cream with, (38) 281.

Limex agrestis, notes, (29) 158.

Liming—see also Lime.

- bacteriological effects, (26) 428; (27) 422.
- cranberry soils, (40) 214.
- effect on—
- bacteria in peat soils, (38) 420.
- barren soils, (31) 819.
- composition of turnips, (29) 418.
- crop production, (28) 624.
- nitrification, (35) 119.
- nitrogen content of soil, (38) 213.
- nitrogen content of soy beans, (34) 632.
- yield of cotton, (29) 430.
- effects in cylinder experiments, (40) 321.

Liming—Continued.

- experiments, (26) 324; (27) 638, 833; (28) 624; (29) 25, 215; (32) 31, 132, 518, 624; (34) 132, 133, 725; (36) 26, 829; (37) 124; (38) 218; (39) 23, 116, 127, 425, 429, 617, 620, 625, 729, 737; (40) 134, 321, 515, 724.

experiments—see also special crops.

- in Argentina, (31) 726.
- in Assam, (37) 427.
- on DeKalb soils, (38) 219; (39) 22.
- on Kentucky soils, (39) 421.
- on moor soils, (39) 437; (40) 229.
- with greenhouse roses, (30) 344.
- notes, (27) 24; (28) 223; (29) 623; (31) 125, 322; (33) 98; (34) 294; (38) 124, 520, 819; (39) 724.
- paper on, (40) 595.
- Yorkshire soils, (40) 128.

Limnaea truncatula, bionomics, (39) 290.

Limnerium—

- blackburni, notes, (31) 249.
- (Campeletis) prodeniae n.sp., description, (26) 352.
- hawaiiense, parasitic on beet webworm, (26) 250.
- n.sp., parasitic on alfalfa caterpillar, (32) 58.
- spp., notes, (27) 262.
- validum, biology, (27) 359.
- validum, notes, (27) 261.

Limnobia spongia, culture for wild ducks, (33) 251.

Limnophora—

- septemnotata, hibernation, (34) 254.
- sp., notes, (27) 560.

Limold, fertilizing value, (36) 122.

Limonia warneckei fruit, analyses, (35) 806.

Limonium—

- californicus, remedies, (36) 758.
- californicus, studies, (30) 758.
- discoldeus, notes, (32) 651.

Limothrips denticornis, notes, (28) 452.

Limquats, paper on, (29) 839.

Lina scripta, notes, (27) 755; (30) 154.

Linaceae—

- cyanophoric glucosids in, (35) 819.
- enzymes of, (28) 502, 503; (31) 610.

Linamarin—

- as affected by enzymes, (28) 503.
- of Java beans, notes, (28) 502.

Linase, activity of, (28) 502, 503.

Lincoln Institute, Missouri, notes, (30) 797.

Linden—

- American, as a medicinal plant, (30) 145.
- borer, notes, (30) 655; (35) 54.
- forcing experiments, (28) 435.
- leaf spot, notes, (35) 251.
- moth, snow white, notes, (26) 147.
- seeds, germination, (33) 343.

Lindera spp. oils of, (37) 109.

Lineshafts, laying out and putting up, (38) 893.

Linguatula taenioides, treatment, (29) 676.

Linguatulid, new, from Ecuador, (37) 357.

Linguatulida from crocodiles, (37) 357.

Linnimentum camphorae, notes, (31) 676.

Linkage—

- in corn, (39) 331.
- intensities, calculation, (36) 729.

Linnaemyia fulvicauda n. sp., description, (31) 456.

Linoleic acid as tetrabromid in cottonseed oil, (32) 313.

Linospora sacchari, notes, (37) 553.

Linsed—

- cake—
- acidity, (32) 259; (35) 770.
- adulteration, detection, (28) 873.
- agglutinating properties, (31) 774.
- analyses, (26) 165, 266, 267, 363, 809; (27) 469, 570, 670, 775, 872; (28) 464; (30) 169, 268, 467; (31) 168, 864; (36) 871.
- determination of purity, (26) 714.
- effect on composition of milk fat, (26) 170.
- for steers, (29) 272.
- formation of hydrocyanic acid in, (28) 377, 378.
- nutritive value, (28) 673.
- palatability and nutritive value, (38) 66.
- residual manurial value, (39) 530.
- meal—
- acidity and rancidity, (36) 666.
- ammonification in soils, (33) 808.

Linseed—Continued.

meal—continued.

- analyses, (26) 72, 165, 362, 568, 665, 714; (27) 68, 170, 171, 371, 469, 669, 670, 774, 872; (28) 265, 364, 464, 465, 669, 769; (29) 270, 367, 467, 570, 666, 769; (30) 67, 68, 169, 268, 466, 565, 671, 868; (31) 73, 366, 467, 470, 564, 663, 864; (32) 169, 259, 568, 667, 862; (33) 71, 170, 371, 568, 665, 759, 761, 870; (34) 72, 169, 263, 371, 467, 566, 665; (35) 374, 562, 867; (36) 65, 167, 368, 667, 765; (37) 268, 471, 767; (38) 67, 368, 369, 376, 665; (39) 70, 167, 270, 370, 773; (40) 72, 470, 571, 665.
 - ash analyses, (29) 861.
 - availability of nitrogen in, (26) 124; (27) 723.
 - digestibility, (32) 69.
 - meal, effect on—
 - breeding power of heifers, (36) 773.
 - fetal development, (33) 266.
 - milk and butter, (34) 471, 570.
 - milk production, (36) 872; (40) 572.
 - meal—
 - evolution of hydrocyanic acid from, (27) 276.
 - feeding value, (39) 775, 784; (40) 278, 874.
 - fertilizing value, (30) 835; (40) 127.
 - for corn-fed pigs, (38) 474.
 - for laying hens, (39) 576.
 - in skim-milk fed calves, (34) 265; (36) 369.
 - in ration, effect on fertilizing constituents excreted, (39) 576.
 - protein for milk production, (36) 671.
 - protein, hydrolysis, (26) 201.
 - sugar content, (37) 208.
 - mucilage, studies, (32) 802.
 - oil adulteration, detection, (30) 617.
 - analyses, (28) 493; (30) 616.
 - chemistry of, (39) 411.
 - detection, (28) 412; (29) 613.
 - industry, statistics, (39) 9.
 - oxygen absorption of, (30) 616.
 - physical constants, (33) 312.
 - production in United States, (40) 614.
 - raw, manganese content, (28) 714.
 - raw, specifications, (32) 416.
 - refractive index, (27) 614.
 - role in glycogen formation, (31) 763.
 - studies, (39) 208.
 - test for gelatinous matter in, (37) 13.
 - toxic effect on rats, (36) 61.
 - varieties, (30) 435.
- Lint, determination in cottonseed meal, (34) 13.
- Lintner's scale, notes, (29) 251.
- Linum spp., enzymes of, (28) 503.
- Linum usitatissimum, breeding for fiber, (30) 637.
- Linyphia phrygiana, notes, (29) 256.
- Liodontomerus—
 - n.spp., descriptions, (38) 165.
 - perplexus n.g. and n.sp., description, (35) 262.
 - spp., studies, (40) 862.
- Liogma nodicornis, biological and systematic studies, (32) 153.
- Liothrips—
 - glycinicola n.sp., description, (26) 553.
 - montanus n.sp., description, (30) 250.
 - montanus, notes, (31) 351.
 - North American species, (37) 561.
 - varicornis n.sp., description, (27) 454.
- Liotropis contaminatus, notes, (28) 451.
- Lip and leg ulceration in sheep, (31) 880; (33) 774.
- Lip sores, spreading, (40) 283.
- Liparis dispar, see Gipsy moth.
- Liparis monacha, see Lymantria monacha.
- Lipase—
 - action, specificity, (30) 806.
 - agglutinating properties, (31) 773.
 - and fat of animal tissues, correlation, (30) 204.
 - castor bean, studies, (27) 712.
 - heat-tolerating, notes, (26) 608.
 - hydrolysis of chicken fat by, (28) 63.
 - in alfalfa, (32) 411.
 - castor beans, (32) 803.
 - Chelidonium seeds, (32) 19.
 - eggs, (28) 64.
 - human duodenal contents, (31) 761.
 - latex of Euphorbia characias, (31) 410.
 - soy beans, (34) 111.
 - tobacco plant, (31) 204.
 - pancreatic, as affected by inorganic salts, (31) 264.

Lipase—Continued.

- powdered, preparation, (28) 610.
 - production by microbes, (26) 803.
 - studies, (28) 610.
- Lipeurus—
 - dovei n.n. (*L. lineatus*), (39) 364.
 - heterographus, notes, (35) 183.
- Lipins—
 - importance in diet during growth, (29) 664.
 - monograph, (39) 202.
 - of egg yolk, physiological properties, (33) 166.
 - role in nutrition, (33) 663.
- Lipochrome, of blood serum of cows, (31) 274.
- Lipoid metabolism in developing chicks, (28) 876.
- Lipoidase, properties, (38) 583.
- Lipoids—
 - absorption in the intestine, (33) 166.
 - anaphylaxis production by, (31) 773.
 - antigenic properties, (28) 880, 885; (29) 782.
 - as inhibitors of anaphylactic shock, (32) 678.
 - chemical and biochemical properties, (31) 577.
 - chemistry and biochemistry of, treatise, (26) 802.
 - distribution in human blood, (36) 365.
 - effect on nutrition and growth, (33) 462.
 - extraction from feeding stuffs, (31) 861.
 - immunizing with, (26) 779.
 - in egg yolk, (26) 67, 503.
 - foods, destruction by heat, (29) 365.
 - green plastids, (31) 427.
 - immunity, (32) 78.
 - Nicotiana, (38) 329.
 - necessity for in diet, (31) 762.
 - of anemic dogs, (38) 583.
 - relation to—
 - electrical potential in plant organs, (30) 630.
 - immune reactions, (35) 881.
 - plant respiration, (27) 132.
 - vitamins, (32) 561.
 - role in nutrition, (26) 766.
- Lipolexis rapae, notes, (28) 162.
- Lipolytic actions, studies, (38) 709.
- Liponyssus—
 - bursa, notes, (37) 360.
 - n.spp., descriptions, (34) 66.
- Lipovaccines, investigations, (38) 584, 782.
- Lippia wrightii, notes, (29) 441.
- Liquid volumes, standardization, (35) 415.
- Liquids—
 - animal and plant, drying, (28) 610.
 - apparatus for extraction, (26) 26.
 - calculation of volume, (36) 299.
 - determination of reaction in, (34) 712.
 - evaporation in vacuum, (28) 893.
 - solubility in liquids, (38) 616.
 - surface condition, (34) 414.
 - turbid, flocculation by salts, (32) 121.
- Liquor—
 - cresoli saponatus, tests, (31) 383.
 - from fermented rice, (29) 118.
- Liquors—
 - definitions, (31) 114.
 - distilled, examination, (30) 258.
 - methods of analysis, (31) 114.
 - sulphite-cellulose, utilization, (28) 222; (29) 129.
- Lissopimpla semipunctata n.sp., description, (28) 162.
- Lissorhoptrus simplex—
 - investigations, (27) 562.
 - notes, (29) 259.
 - remedies, (33) 257; (37) 568.
- Lister Institute of Preventive Medicine, papers, (31) 277; (32) 874.
- Listronotus latiusculus, notes, (30) 655.
- Listrophorus gibbus, notes, (35) 80.
- Lita solanella—
 - notes, (30) 753.
 - studies, (40) 854.
- Litchi—
 - culture and use, (38) 43.
 - culture experiments, (37) 142.
 - erinoise, treatment, (37) 142.
 - insects affecting, (38) 44.
 - nut, composition, (39) 203.
 - nut, food value, (40) 173.
 - seeds, transportation, (35) 538.
- Lithium—
 - bromid, effect on powdery mildew infection, (33) 244.
 - carbonate, fertilizing value, (30) 627.

Lithium—Continued.

- compounds as plant food, (35) 728.
 - determination, (27) 609.
 - determination in water, (37) 506.
 - in plants, (38) 409.
 - in soils, (31) 720; (34) 323.
 - nitrate, penetration of trees by, (37) 327.
 - phosphate, toxicity toward tomatoes, (31) 218.
 - salts, effect on—
 - disease susceptibility in cereals, (29) 844.
 - plants, (28) 526.
 - saccharification of starch, (26) 309.
 - wheat, (29) 520.
 - salts, toxicity toward plants, (36) 129; (35) 629.
 - separation from other alkali metals, (36) 505.
 - sulphate, effect on olives, (26) 825.
 - sulphate, effect on plants, (25) 527.
- Lithocolletes**—
- geminatella, studies, (35) 359.
 - spp., notes, (35) 356.
- Lithocolletis**—
- color pattern in, (36) 656.
 - cratagella, notes, (32) 651; (36) 656.
 - gaultheriella, notes, (34) 651.
- Lithohypoderma**, new fossil genus, (36) 553.
- Lithospermum fruticosum**, analyses, (33) 466.
- Litmus**—
- as indicator for tubercle bacilli, (40) 584.
 - for bacteriological work, (35) 133.
 - preparation, (38) 9.
 - substitute for milk cultures, (37) 686.
- Litomastix (Copidosoma) truncatellus**, parasitism, (31) 458.
- Litter**, analyses, (29) 119.
- Litter**, effect on manure, (26) 424; (36) 23.
- Little leaf**, studies, (34) 248.
- Live oak**, Christmas berry tings affecting, (26) 148.
- Liver**—
- anaphylactic reaction, (38) 182.
 - catalase content as affected by emotions, (38) 167.
 - distomiasis in Japan, (34) 858.
 - flake disease, treatment, (36) 83.
 - flukes, notes, (35) 877.
 - function in metabolism, (26) 565.
 - function of, (26) 364.
 - glycogen content, (31) 465.
 - glycogen content during fasting, (30) 867.
 - lipids, chemistry of, (31) 577.
 - meal for cows, (36) 273.
 - of bovines, studies, (29) 377.
 - oxen, chemical and physiological examination, (26) 873.
 - pigs, anatomy and histology, (28) 783.
 - sulphur, fungicidal value, (36) 51; (37) 48.
 - sulphur, purchase and use, (31) 846.
 - prevention of beriberi by, (31) 762.
 - protein storage in, (31) 464.
- role in**—
- metabolism of creatin and creatinin, (32) 764.
 - metabolism of fats, (31) 69.
 - production of complement, (36) 381.
 - rot of sheep, studies, (39) 290.
 - storage of purin in, (30) 261.
 - tissue, rôle in anaphylactic reaction, (38) 79.
- Liverworts of Malay region**, (35) 431.
- Livestock**—*see also* Animals, Cattle, Sheep, etc.
- as affected by moldy corn, (27) 156.
 - associations in various countries, (26) 873.
 - bedding materials, (39) 621.
 - breed history, teaching, (38) 897.
- breeding**—
- and management, (27) 469.
 - associations, (38) 263.
 - in Belgium, (32) 668.
 - Brazil, (34) 371.
 - British East Africa, (37) 734.
 - Germany, (31) 70.
 - New Jersey, (27) 371.
 - neglected factors in, (37) 365.
 - treatise, (29) 68.
- breeds of, textbook, (34) 866.
 - British export trade in, (28) 769.
 - care and management, (33) 495.
 - cars and yards, disinfection, (38) 179.
 - classification at county fairs, (37) 598.
 - combining rations for, (29) 170.
 - commissioner of Canada, report, (26) 881; (31) 79.

Livestock—Continued.

- conditions and losses in Selby smoke zone, (34) 278.
 - conditions in Imperial Valley, (26) 482.
 - cost of gains on pasture, (29) 170.
 - cost of raising, (33) 293; (37) 790; (38) 894.
 - definition of "breed," (34) 466.
 - dipping for ticks, (32) 81.
 - disease in Patagonia, (30) 783.
- diseases**—
- and pests in Wales, (39) 283.
 - control in Georgia, (32) 876.
 - control in Hawaii, (34) 477.
 - in Canada, (38) 581.
 - England, (38) 282.
 - Guam, (35) 877.
 - Hawaii, (31) 177.
 - Imperial Valley, (34) 274.
 - Minnesota, (38) 281.
 - Pennsylvania, (27) 475.
 - notes, (34) 383.
 - state control, (34) 184.
 - treatise, (38) 781.
- dissemination of weeds by, (26) 839.
 - East Anglian breeds, notes, (26) 165.
 - economics, treatise, (39) 96.
 - elementary course in, (27) 96.
 - English breeds, importation into British East Africa, (26) 267.
 - exhibitions in Argentina, (26) 573.
 - exhibits, health certificates for, (38) 179.
 - export and import, inspection and quarantine, (29) 778.
 - export trade of Great Britain, (26) 473.
 - exports and imports in Ireland, (38) 180.
 - fairs and exhibitions in United States, (28) 796.
 - farms, managing and equipping, (27) 871.
 - feeding, (31) 494; (32) 68; (37) 471; (40) 71.
 - feeding in South Africa, (26) 666.
 - feeding, principles of, (26) 631.
 - feeding, textbook, (38) 597.
 - feeding, treatise, (28) 465, 898; (31) 563; (33) 664, 696; (36) 666; (37) 94; (38) 268.
 - fertility as affected by feeding stuffs, (29) 170.
 - fish meal for, (31) 563.
 - function in agriculture, (34) 305; (37) 572.
 - German breeds, treatise, (33) 668.
 - great central markets, (40) 488.
 - hygiene and diseases, treatise, (33) 876.
 - immunization in India, (35) 784.
 - importation problem in Philippines, (34) 274.
 - improvement, (37) 768.
- improvement**—
- community organization for, (35) 89.
 - in Denmark, (27) 590.
 - in Wales, (36) 495; (37) 294.
 - of breeds, (27) 173.
 - syndicates in France, (27) 691.
- in Canada in 1916**, (40) 792.
- German colonies, (38) 192.
 - Germany, (33) 296, 668.
 - health and disease, treatise, (32) 874.
 - New Zealand, (31) 191, 467; (37) 791.
 - Sweden, (37) 191.
 - United States, (34) 393.
- industry in**—
- Alberta, (29) 467.
 - Argentina, (26) 573; (32) 364; (33) 71, 268.
 - Australia, (27) 595; (28) 365; (31) 266.
 - Bavarian Alps, (40) 891.
 - Belgian Congo, (28) 365.
 - Belgium, (26) 874.
 - Bosnia, (29) 368.
 - Canada, (28) 365; (39) 268.
 - Chile, (32) 689.
 - Dekkan, (27) 489.
 - Department of Junin, (27) 469.
 - Dutch East Indies, (26) 768; (29) 368.
 - Great Britain, (29) 169; (33) 789.
 - Honduras, (27) 171.
 - Hungary, treatise, (27) 672.
 - Italy, (38) 168.
 - Jeverland, (28) 465.
 - Manitoba, (27) 594.
 - Netherlands, (28) 669.
 - New Zealand, (33) 268.
 - Philippines, (26) 361.
 - Queensland, (27) 470; (30) 791; (33) 71.
 - Sao Paulo, (27) 870; (29) 368.
 - Saskatchewan, (27) 594.

Livestock—Continued.

- industry in—continued.
 - Saxony, (32) 689.
 - southern India, (27) 871.
 - Switzerland, (37) 769.
 - Tunis, (31) 492.
 - United States, (27) 571; (31) 73, 167.
 - Washington, (28) 265.
- industry, licenses and regulations, (39) 676.
- industry, review, (27) 171.
- insects affecting, (27) 356; (29) 454; (34) 651; (37) 459; (38) 459.
- inspection for interstate movement, (36) 675.
- insurance—
 - against fire, (37) 888.
 - cooperative, in England, (27) 676.
 - in Denmark, (27) 794.
 - England and Wales, (27) 795; (31) 95.
 - France, (26) 388.
 - New England, (36) 192.
- interstate shipment, (36) 477; (38) 179.
- judging—
 - contest for boys, (27) 395, 396.
 - teaching, (38) 897.
 - textbook, (32) 668.
 - treatise, (33) 71, 870; (37) 94.
- labor requirements, (36) 790.
- laws in Wyoming, (38) 581.
- local markets for, (29) 896.
- losses in United States, (35) 192.
- maintenance rations, (26) 664.
- management in the West, (40) 176.
- manual, (26) 165.
- market, statistics in 1912, (28) 769.
- marketing, (34) 305, 399; (36) 166, 392, 593.
- marketing—
 - cooperatively, (28) 894; (29) 789; (38) 494.
 - cooperative, advantages of, (33) 491.
 - in Australia, (27) 691.
 - Pacific coast region, (26) 293.
 - the South, (37) 390.
 - United States, (35) 393; (36) 164.
- markets of London, (27) 69.
- metabolism experiments, (35) 271.
- mineral requirements, (27) 68; (31) 864.
- native, of Guam, (30) 68.
- on Belle Fourche project, (38) 67.
- on cut-over land of South, (39) 268.
- on Yuma reclamation project, (29) 226.
- parasites, control, (34) 306; (39) 856.
- parasites in West Indies, (31) 779.
- parasites of, (38) 481.
- plants poisonous to, (35) 383; (37) 638.
- poisoning—*see also Cattle and Forage poisoning*.
- Plants, poisonous, and specific plants.
 - by cotton seed, (26) 780.
 - flaxseed screenings, (26) 86.
 - larkspur, (35) 779.
 - lupines, (36) 276.
 - plants of sorghum group, (34) 577.
 - sugar beets, (34) 80.
- notes, (29) 280.
- prices—
 - and movement in 1916, (37) 492.
 - in England and Wales, (31) 790.
 - India, (34) 195.
 - Ireland, (31) 96 (32) 594; (33) 492; (37) 291.
 - Scotland, (35) 497.
- production—
 - and diseases, book on, (39) 268.
 - and marketing in United States, (38) 595.
 - for 1919, (40) 276, 487.
 - in blue-grass region of Kentucky, (37) 471.
 - Maine, (39) 880.
 - Pennsylvania, (39) 268.
 - Tennessee, (35) 795.
 - western range States, (35) 667.
- labor saving in, (40) 73.
- 1918 program, (38) 896.
- on Indian reservations, (35) 374.
- relation to tenancy, (26) 687.
- review of literature, (26) 666.
- treatise, (34) 563; (40) 176, 177.
- under dry farming, (26) 828.
- products, cost data, (37) 790.
- purebred, importation into Guam, (30) 69.
- purebred, notes, (31) 767.
- rations for, (31) 663; (38) 572.
- receipts and shipments at—
 - Kansas City, (39) 268.

Livestock—Continued.

- receipts and shipments at—continued.
 - Union Stock Yards, Chicago, (31) 74; (38) 574.
- registration, (27) 299.
- Registry Board, report, (27) 72.
- relation to—
 - farm receipts, (27) 669.
 - soil fertility, (37) 215.
 - soil maintenance, (36) 197.
- remedy law in Kansas, (34) 169.
- rôle of herd book in improving, (27) 672.
- sanitary—
 - boards, organization, (38) 179.
 - control work in Canada, (34) 184.
 - control work in Tennessee, (30) 78.
 - law in Alabama, (30) 778; (36) 879.
 - laws in Arkansas, (36) 675.
 - officers, list, (29) 770.
 - regulations in Montana, (38) 282.
 - regulations in New Mexico, (38) 282.
- sanitation—
 - papers on, (38) 179.
 - problem in, (34) 274.
- shipping associations—
 - accounting system for, (35) 893.
 - cooperative, (35) 168, 673.
 - in Minnesota, (32) 688, 895; (35) 296.
 - in Wisconsin, (28) 593.
- statistics, (29) 770; (40) 594.
- statistics—
 - at United States markets, (34) 291.
 - in Argentina, (39) 796.
 - Born, (27) 470.
 - British Empire, (28) 295.
 - Canada, (26) 896.
 - Costa Rica, (33) 395.
 - Cuba, (37) 892.
 - Egypt, (36) 777.
 - Egypt, Spain, Morocco, and Tunis, (37) 292.
 - England, (36) 393.
 - England and Wales, (35) 590; (38) 495; (40) 594.
 - Finland, (30) 692; (35) 497; (36) 895; (40) 392.
 - foreign countries, (34) 490.
 - France, (34) 691; (37) 891.
 - Germany, (30) 494.
 - India, (34) 595; (40) 793.
 - Indo China, (38) 574.
 - Ireland, (33) 894; (34) 291.
 - Latin America, (27) 469.
 - Morocco, (40) 194.
 - Nebraska, (40) 194.
 - New Zealand, (38) 574; (40) 195.
 - Prussia, (27) 181.
 - Rhodesia, (37) 492.
 - Scotland, (33) 894; (37) 392; (40) 194.
 - South Australia, (27) 693.
 - Sweden, (37) 93, 492.
 - Tunis, (34) 595.
 - Union of South Africa, (30) 494; (33) 895.
 - United Kingdom, (31) 391.
 - United States, (26) 768; (27) 593; (30) 691; (34) 690; (35) 667, 772.
- tonics, inspection and analyses, (39) 70.
- transportation law, (38) 470.
- transportation, sanitation in, (36) 675.
- types and market classes, textbook, (37) 194.
- v. grain farming, (39) 531.
- watering devices for, (27) 486; (30) 389; (33) 188.
- watering places, developing, (29) 570.
- watering places on western grazing lands, (31) 366.
- Livia maculipennis*, notes, (35) 256.
- Living—
 - conditions in Alabama, (37) 91.
 - cost of, *see* Cost of living.
 - substance, composition, (28) 201.
 - substances, renewal, (26) 763.
- Lixus—
 - concavus, biology, (29) 56.
 - junci, notes and remedies, (29) 562.
 - scabricollis, notes, (36) 355.
 - spp., notes, (30) 357.
- Lizards—
 - relation to verruga, (31) 847.
 - Texas horned, economic status, (33) 745.
 - wall, as host of *Phlebotomus minutus*, (30) 159.

- Llama, value as domestic animals, (27) 470.
 Loads for highway bridges, (36) 489.
 Loads, pulling experiments, (36) 388.
 Loam, effect on peat soils, (30) 119.
 Loboptera extranca, parasite of, (40) 854.
 Lobster—
 creatin and creatinin content, (31) 760.
 refuse, analyses, (32) 424.
 Loco weed—
 description, (32) 474; (39) 386.
 disease in sheep, (31) 781; (32) 276.
 disease, investigations, (27) 580.
 histology, (38) 481.
 notes, (32) 778.
 stock poisoning by, (39) 787.
 Locomobile, gas, description, (27) 791.
 Locust tree—
 bacterial disease, notes, (30) 54.
 bark, poisoning of horses by, (30) 785.
 bean meal, analyses, (37) 873.
 borer, black, notes, (40) 161.
 borer, notes, (26) 536; (28) 156; (33) 253; (37) 566.
 borer, remedies, (34) 757.
 borer, studies, (33) 555, 552.
 hispa, notes, (29) 353.
 leaf miner, notes, (28) 157; (30) 657.
 seeds, germination tests, (27) 444.
 Locust trees—
 as affected by tarring roads, (26) 432.
 black—
 culture in Indiana, (33) 50.
 destruction, (26) 334.
 destruction by Chinese cotton scale, (26) 556.
 insects affecting, (35) 355.
 seeds as food, (40) 658.
 carpenter worm affecting, (31) 550.
 insects affecting, (35) 552.
 yellow, description and use, (35) 451.
 Locusts—*see also* Grasshoppers.
 analyses, (34) 624.
 analyses and feeding value, (38) 72.
 at sea, (37) 115.
 bacterial epizootic of, (26) 246, 553.
 brown, life history and habits, (30) 754.
 catching machine for, (37) 257.
 coccobacillus of, (31) 752, 753.
 control, (28) 60; (29) 793; (36) 252; (37) 156, 561; (39) 159, 556, 656, 863.
 control—
 by bacteria, (35) 56, 255, 853.
 by parasites, (37) 357, 760; (38) 258, 358; (40) 164.
 in Algeria, (36) 356, 755; (37) 461.
 Algeria, Tunis, and Morocco, (35) 356.
 Anglo-Egyptian Sudan, (30) 546.
 Argentina, (26) 247, 452; (27) 357; (37) 849.
 Austria, (26) 247.
 British Columbia, (35) 253.
 Canada, (35) 56, 356; (36) 456.
 Colorado, (38) 258.
 Italy, (35) 255.
 Kansas, (31) 249, 351; (37) 560.
 Malay, (34) 254; (37) 849.
 Minnesota, (28) 59, 60, 653.
 Morocco, (36) 857; (38) 461.
 New Hampshire, (38) 155.
 New Mexico, (36) 85.
 New York, (36) 556.
 Philippines, (30) 442; (38) 459.
 South Africa, (33) 856; (35) 356; (36) 457, 653.
 South Dakota, (37) 561.
 Stavropol, (30) 754.
 Trinidad, (35) 356, 463.
 Turkistan, (31) 849.
 Uruguay, (37) 55, 849.
 various countries, (37) 848.
 Wisconsin, (38) 155.
 destruction, (27) 358.
 destruction—
 by birds, (28) 351; (31) 57.
 by Coccobacillus acridorum, (33) 154.
 by natural enemies, (29) 354.
 in Argentina, (27) 454.
 enemies of, (28) 653; (32) 848.
 fertilizing value, (34) 854.
 fungus disease affecting, (27) 357.
 in Colorado, (28) 60.
 in Nebraska, (26) 655.
- Locusts—Continued.
 in Philippines, (26) 347, 857.
 injurious to alfalfa, (32) 553.
 injurious to potatoes, (37) 157.
 invasion in Costa Rica, (35) 55.
 invasions in Egypt, (37) 561.
 invasions in Jerusalem, (34) 854.
 Jola or Deccan, notes, (26) 347.
 lesser migratory, studies, (36) 153.
 lessons on, (28) 598.
 life history and remedies, (37) 661; (38) 54.
 migratory—
 in Philippines, (28) 753; (31) 549.
 in South America, (28) 753; (34) 854.
 notes, (31) 752; (37) 561.
 notes, (26) 59; (27) 53; 757, (28) 654; (29) 252, 453, 652, 757; (31) 98; (32) 651; (36) 153; (38) 653.
 of Nova Scotia, (40) 57, 856.
 outbreaks in United States, (35) 156.
 parasite of, (32) 60.
 parasite of, adult habits, (40) 459.
 periodical, *see* Cicada, periodical.
 Philippine, propagation and distribution, (30) 546.
 poison for, device for sowing, (38) 558.
 17 year, *see* Cicada, periodical.
 treatise, (38) 359.
 Lodgpole pine beetle, notes, (32) 552.
 Loemopsylla cheopis, infectiousness, (40) 161.
 Log rules, limitations and corrections, (34) 538.
 Log slides, velocity determinations, (32) 48.
 Logan River basin, profile survey, (36) 583.
 Loganberries—
 composition, (39) 9, 411.
 culture, (29) 148; (31) 441; (38) 643; (40) 150.
 culture experiments, (28) 436.
 picking and packing, (33) 47.
 training, (33) 47; (40) 743.
 varieties in Oklahoma, (27) 241.
 Loganberry—
 beetle, notes, (40) 265.
 by-products, preparation and use, (31) 414.
 diseases, notes, (27) 448.
 diseases, notes and treatment, (28) 748.
 hybrid origin, (36) 141.
 juice, analyses, (31) 414.
 juice, manufacture, (39) 412.
 oil, juice, and pulp, composition, (38) 203.
 pollen, germination, (33) 731.
 wilt, description, (34) 55.
 Logarithmic curves, fitting by method of moments, (32) 766.
 Loggerhead sponge, fertilizer from, (31) 622.
 Logging—
 cost accounting system, (32) 748.
 terms, (30) 44.
 textbook, (30) 44.
 Logs, errors in caliper measurements, (26) 141.
 Logs, transportation in French colonies, (30) 447.
 Logwood as factor in dyestuff situation, (40) 16.
 Lolium—
 fungi affecting, (26) 545.
 multiflorum, analyses and culture, (31) 434.
 perenne, dissemination by insects, (27) 47.
 spp., germination as affected by light, (30) 531.
 spp., seeding on ranges, (30) 35.
 temulentum—
 as an adulterant of flour, (26) 710.
 ceptochoceton, culture in Uruguay, (26) 132.
 symbiosis with fungi, (27) 751.
 Lonchaea—
 aenea, notes, (34) 856.
 chalybea, notes, (28) 854.
 splendida, notes, (27) 54.
 Lonchocarpus spp. in Central America and Mexico, (37) 819.
 Long scale, notes, (32) 56.
 Longavirbo, notes, (28) 542.
 Longicorn beetles in Australia, (36) 360.
 Longicorn larvae, remedies, (32) 246.
 Longulus scale, notes, (28) 452.
 Loossia n.g. and n.spp., descriptions, (33) 773.
 Lophidium chamaeropsis n.sp., description, (32) 842.
 Lophionema chodati n.sp., description, (38) 448.
 Lophodermium—
 brachysporum, notes, (26) 852, 853; (29) 851; (30) 448.
 chamaecyparissii n.sp., description, (27) 149.
 generic position, (26) 852.
 macrosporum, notes, (26) 451; (37) 550.

- Lophodermium—Continued.
 nervisequum, investigations, (27) 854; (32) 752.
 nervisequum, notes, (27) 350, 450.
 pinastri, notes, (28) 652; (30) 152, 545; (32) 845; (37) 458, 550.
 pinastri, studies, (26) 651.
- Lopholatilus chamaeleonticeps, notes, (34) 557.
- Lophophora williamsii, studies, (34) 336.
- Lophortyx californica—
 notes, (27) 355.
 vallicola, eating of alfalfa weevil by, (31) 655.
- Lophyrus—see also Neodiprion.
 abbotii, notes, (26) 147.
 abietis, notes, (38) 257.
 hercyniae, notes, (30) 249.
 indicus n.sp., description, (31) 62.
 pini, notes, (31) 554.
 simile, see Diprion simile.
 spp. in Europe, (35) 760.
- Lopidea—
 media in Maryland, (38) 155.
 robiniae, description, (35) 255.
- Loquat, crown gall affecting, (28) 447.
- Loquats—
 host plant of fruit fly, (26) 758.
 studies, (32) 838.
- Loranthaceae—
 effect on hosts, (28) 548.
 osmotic pressure of tissue fluids, (37) 47.
 tropical, transpiration experiments, (31) 324.
- Loranthus—
 entebbensis, notes, (35) 45.
 secundiflorum, notes, (26) 549.
 sp., habits and relations, (30) 745.
 sp., parasitic on Para rubber, (26) 345.
 sphaerocarpos, parasitic on Dracaena, (27) 252.
 spp. on rubber, (33) 651; (38) 53.
 theobromae, notes, (36) 846.
 theobromae, relation to citrus knot, (36) 851.
- Losa, description, (30) 35.
- Lotononis sp., analyses and digestibility, (27) 871.
- Lotus—
 australis, analyses, (27) 68, 469.
 borer, studies, (40) 756.
 corniculatus—
 culture in Hawaii, (32) 730.
 fertilizer experiments, (27) 24.
 hydrogen cyanid in, (27) 30.
 variation in, (29) 321.
 nodule, bacteria of, (32) 33.
- Loughridge, R. H., biographical sketch, (37) 496.
- Louisiana—
 States—
 financial statement, (28) 194.
 notes, (26) 395; (27) 197, 600; (28) 93, 300, 900; (30) 796; (34) 496; (36) 695; (37) 196, 700; (38) 900; (39) 96; (40) 297, 900.
 report, (30) 696, 899; (33) 96; (35) 396; (37) 599; (39) 598.
 report of director, (28) 194.
 University, notes, (26) 395; (27) 697; (30) 497; (32) 396; (38) 97; (40) 900.
- Louping-ill—
 in sheep, (29) 681; (36) 83.
 notes, (26) 383.
 studies, (40) 383.
 transmission by ticks, (37) 277.
- Low pressure at Paris, (36) 719.
- Lowlands of Missouri, reclamation, (27) 290.
- Loxostege—
 similis, see Garden webworm.
 sticticalis—
 life history, (38) 562.
 notes, (29) 652; (32) 153.
 studies, (27) 861; (29) 54, 252.
 treatment, (26) 648.
- Loxostoma sp. on sugar cane, (33) 560.
- Lubber grasshopper, remedies, (36) 55.
- Lubricants for internal combustion engines, (30) 690; (32) 86.
- Lubricating materials, methods of analysis, (27) 205.
- Lucern, see Alfalfa.
- Lucilia—
 sericata—
 attacking a live calf, (32) 851.
 heredity of bristles in, (31) 551.
 notes, (28) 255; (34) 554; (38) 161.
 studies, (33) 157.
 sp., relation to leprosy, (31) 851.
 spp., hibernation, (38) 262.
- Lues, serodiagnosis, (31) 877.
- Luizet stones, hydrocyanic acid content, (27) 12.
- Lulu kernels and oil, analyses, (37) 14.
- Lumbago oil—
 analyses, (29) 811.
 notes, (30) 616.
- Lumber—see also Timber and Wood.
 accounting, notes, (34) 896.
 and its uses, treatise, (31) 840.
 camps, conservation of life in, (31) 340.
 cost of logging and manufacturing, (35) 452.
 deterioration, (33) 243.
 drying, (28) 239; (36) 809.
 effect on lasting quality of paint, (33) 90.
 estimator, book, (29) 240.
 industry—
 by-products in United States, (35) 44.
 control, (36) 744.
 in British Columbia, (32) 747.
 Canada, (26) 544; (28) 644; (30) 46; (32) 841; (35) 347; (36) 244; (37) 245; (38) 146, 147.
 Java and Madoera, (34) 239.
 Middle West, (38) 847.
 Montana, (35) 542.
 Oregon, (28) 439.
 Philippines, (31) 641; (38) 45.
 Texas, (33) 788.
 Trent watershed, Ontario, (31) 445.
 United States, (30) 536, 791, 844; (32) 48; (33) 344; (36) 644.
 United States, handbook, (35) 649.
 Wisconsin, (31) 444.
 terms used in, (38) 545.
 kiln drying, (33) 243; (34) 152.
 kiln drying, treatise, (38) 46.
 markets on east coast of South America, (35) 453.
 mold, prevention, (27) 753.
 of Philippines, (40) 152.
 prevention of sap stain in, (26) 339.
 production in 1914-15, (37) 148.
 production in 1916, (39) 452.
 production in 1917, (40) 843.
 resources of Texas, conservation, (34) 489.
 round-edge, utilization, (36) 145.
 storage, (37) 349.
 substitutes, (38) 248.
 use by wood-working industries, (38) 751.
 use on California farms, (40) 90.
 used by manufacturers in Canada, (26) 644.
 waste as source of potash, (37) 722.
 waste, utilization, (35) 843.
- Lumbering—
 bibliography, (26) 442.
 in California, (36) 745.
 operations, flumes in, (31) 485.
- Lumbermen, conditions among in Sweden, (37) 890.
- Lumbricidae of North America, (40) 267.
- Lumbricus rubellus, carbon dioxide exhalation of, (26) 619.
- Lumpy jaw, see Actinomycosis.
- Lunar—
 eclipses in 1917, (38) 812.
 halo of July 24, 1861, (35) 115.
 periods, effect on climate, (34) 14.
 rainbow, (38) 511.
- Lunch—
 room conducted by Board of Health, New York City, (33) 753.
 rooms, equipment and management, (35) 368.
 rooms, treatise, (26) 564.
- Lunches—
 box, planning, (31) 394.
 for rural schools, (30) 462.
 school children, (29) 464, 465; (34) 257.
 school children in Philadelphia, (31) 660.
 women clerks in Bank of England, (30) 166.
 recipes and cost data, (33) 68.
- Lung—
 distome, intermediate host, (35) 384, 631; (36) 577.
 plague—
 in bovines, immunization, (26) 578, 676.
 notes, (26) 373.
 prevalence in Prussia, (27) 181.
- Lungs of mammals, weight of, (29) 476.
- Lungworms—
 life history and treatment, (35) 182; (37) 179.
 notes, (35) 878.
 of sheep and deer, relationship, (30) 284.

- Lungworms**—Continued.
 studies, (34) 879.
 thread, in goats, (34) 274.
 treatment, (35) 488.
- Luperinus californicus**, notes, (38) 157.
- Luperodes varicornis**, notes, (34) 555.
- Lupinus rufipes**, notes, (31) 848.
- Lupine**—
 anthracnose, notes, (28) 648.
 chlorosis, treatment, (32) 842.
 disease, new, (39) 53.
 flakes, analyses, (28) 873.
 flakes, analyses and feeding value, (33) 170.
 flakes for sheep, (29) 572.
 flakes, preparation and use, (36) 367.
 forage, effect on milk and butter, (34) 570.
 radicles as affected by metallic salts, (32) 128.
 seed as affected by disinfectants, (26) 820.
 seed, composition, (33) 665.
 seed, germination as affected by green manures, (33) 331.
 seed, germination tests, (29) 740.
 seed phasin, agglutinating properties, (31) 774.
 shoots, etiolated, absorption of nitrogen by, (35) 435.
 straw as a ground covering for fir, (30) 446.
- Lupines**—
 absorption—
 and excretion of electrolytes by, (32) 824.
 and secretion of salts by, (34) 224.
 of salt mixtures by, (36) 128.
 and mustard, continuous culture, (29) 431.
 as affected by—
 distilled water, (30) 825.
 ether, (26) 127.
 lime, (35) 441.
 manganese sulphate, (26) 226.
 smoke, (31) 521.
 as coffee substitutes, (40) 864.
 cover crop for orchards, (37) 833.
 green manure, (35) 629; (40) 229.
 poisonous plants, (36) 276.
 sand binder, (29) 427.
 assimilation of nitrogen by, (31) 523.
 bacteria as affected by acidity, (39) 722.
 behavior of organic substances in, (39) 526.
 behavior toward ammonium salts, (36) 632.
 blue, germination as affected by fertilizers, (29) 327.
 blue, toxicity, (39) 184.
 composition and digestibility, (27) 669.
 culture experiments, (40) 238.
 culture in Rhodesia, (27) 32, 637.
 culture on moorland, (30) 229.
 culture under dry farming, (30) 435.
 description, (32) 474.
 description and agricultural value, (36) 635.
 drying, (27) 669.
 fertilizer experiments, (26) 428, 631; (27) 235; (29) 631; (30) 229; (33) 531.
 fertilizing value, (32) 216.
 fungus disease of, (26) 747.
 germination as affected by Roentgen rays, (28) 128.
 germination tests, (30) 837.
 growth as affected by—
 fertilizer salts, (29) 329.
 phytin, (28) 128.
 radioactivity, (28) 731.
 growth in distilled water, (34) 827.
 growth in heated soils, (26) 815.
 growth on volcanic ash, (40) 812.
 hybridization experiments, (30) 735; (31) 131, 524; (32) 433; (35) 322; (40) 822.
 inoculation experiments, (30) 735; (31) 131, 524; (32) 433; (35) 322; (40) 822.
 irrigation experiments, (29) 631.
 lime intolerance, (27) 722.
 liming experiments, (33) 133.
 nitrification, (28) 124.
 nodule bacteria of, (32) 33.
 relation of tops to roots, (31) 733.
 removing bitter flavor, (36) 635.
 sensitiveness to calcium, (34) 724; (35) 430.
 stock poisoning by, (39) 184, 787.
 stored, variations in weight of, (31) 235.
 toxicity, (39) 184.
 transformation of nitrogen by, (29) 133.
 utilization of phosphates by, (31) 733.
 varieties, (26) 631.
 white, root system, (32) 634.
- Lupines**—Continued.
 yellow and blue, seed varieties of, (30) 38.
 yellow, fertilizing value, (26) 323.
- Lupinosis** in horses, (34) 583.
- Lupinus**—
 albus, phosphatids in, (27) 203.
 albus, tropisms of in alkali solutions, (31) 325.
 angustifolius, analyses, (33) 466.
 hartwegii, culture in Hawaii, (32) 730.
 luteus, behavior on lime soils, (31) 425.
 luteus, enzymatic splitting of arginin in, (39) 733.
 sericeus, description, (39) 386.
 spp., notes, (32) 778.
- Lupulin** in hops, (33) 530.
- Lupus** viruses, investigations, (26) 884.
- Luteal cells** and hen-feathering, (40) 665.
- Lutein** in egg yolk, (26) 67, 563; (27) 611.
- Luteins**, constitution of, (30) 501.
- Luyaluya**, notes, (26) 362; (30) 230.
- Lycæna**—
 baetica, notes, (27) 155.
 spp., behavior of ants toward larvae, (27) 258.
- Lycenid**, reared in *Acacia* galls by ants, (31) 352.
- Lychnis**—
 dioica—
 chemistry and anatomy of, (34) 522.
 chlorophyll factors in, (35) 227.
 hermaphroditism in, (30) 842.
 primary color factors, (27) 733.
 inheritance in, (36) 331.
 inhibiting factors in breeding, (26) 827.
- Lycium barbarum**, localization of betain in, (27) 203.
- Lycopodon** spp., effect on vegetation, (38) 222.
- Lycopersicin**, formation in tomatoes, (32) 203.
- Lycopin**—
 and its relation to chlorophyll, (32) 824.
 development in tomatoes, (29) 132.
- Lycetus**—
 beetles, remedies, (36) 758.
 planicollis, egg and manner of oviposition, (35) 357.
- Lyda stellata**—
 egg parasite of, (26) 557.
 notes, (30) 249.
- Lygaenematus**—
 erichsonii, see *Nematus erichsonii*.
 moestus, notes, (29) 861; (30) 53.
- Lygeum spartum**, culture and use, (33) 131.
- Lygidea mendax**—
 food plants of, (36) 356.
 notes, (26) 147; (28) 752; (30) 359, 852; (32) 550, 651; (33) 58, 252; (34) 158, 752; (35) 54; (36) 856.
 oviposition, (34) 255.
 remedies, (35) 456; (39) 760.
 scars on apples, (39) 257.
 studies, (34) 754.
- Lygum spartum**, roots of, (26) 535.
- Lygus**—
 communis—see also *Apple bug*, green.
 n.sp., description, (36) 550.
 novascotiensis n.var., description, (36) 550.
 invitus, notes, (36) 550.
 invitus, oviposition, (34) 255.
 invitus, studies, (30) 358; (36) 457.
 n.forms, descriptions, (40) 353.
 pratensis, see *Tarnished plant-bug*.
 revision and biology, (38) 461.
 spinolae, notes, (38) 57.
 studies, (40) 353.
- Lymantria monacha**, investigations, (28) 755.
- Lymexylonidae**, structure and biology, (28) 858.
- Lymph** and blood, amino nitrogen and glucose in, (39) 670.
- Lymph antibodies**, origin, (35) 73, 279.
- Lymphadenitis**—
 caseous, in sheep, (35) 574.
 in man, (33) 450.
- Lymphadenoma**, transmission by bedbugs, (31) 550.
- Lymphangitis**—
 epizootic, (39) 190, 253, 291, 339, 679, 789; (40) 85, 289, 586, 885.
 epizootic—
 causative organism, (37) 377.
 diagnosis, (38) 886.
 immunization, (38) 785.
 in France, (37) 692.
 in Hawaii, (39) 679.

Lymphangitis—Continued.— epizootic—continued.

- in horses, (30) 679; (34) 384.
- studies, (27) 188; (28) 379; (38) 83.
- treatment, (28) 784; (37) 377, 781; (38) 587, 588, 689, 887; (39) 81, 185.
- in cattle, (36) 82.
- in horses, causative organism, (34) 480.
- in horses, studies, (26) 288.
- ixodic, notes, (38) 785.
- staphylo-strepto-cryptococcic, (40) 680.
- terminology, (39) 791.
- treatment, (27) 86; (39) 81, 185, 287, 680, 791.
- ulcerative, (39) 190, 283; (40) 85, 780, 886.
- ulcerative—
 - disease simulating in horses and calves, (34) 186.
 - in horses, (35) 574; (38) 785, 889.
 - in horses, immunization, (37) 583.
 - treatment, (39) 185, 287.

Lymphatic—

- gland tubercle, histogenesis, (28) 882.
- glands in meat-producing animals, treatise, (34) 876.
- glands of bovines, tubercle bacilli in (26) 281.
- system of bovines, (27) 784.
- system, origin and development, (36) 478.
- Lymphocystis macropodis, notes, (27) 883.
- Lymphocytozoon cobayae, notes, (27) 882.
- "Lymphoid defense," relation to diet and blood cholesterol, (40) 767.
- Lynchia maura in North America, (35) 759.
- Lyndon Institute, farmers' week at, (26) 496.

Lyperosia—

- exigua, bionomics, (39) 467.
- exigua, relation to trypanosomiasis, (31) 777.
- irritans, *see* Horn fly.
- minuta, mouth parts and sucking apparatus of, (29) 760.
- sp., relation to surra in carabaos, (28) 756.
- sp., studies, (26) 559.

Lyrosoma opaca, parasitism, (31) 60.

Lysalbinic acid, nitrogen distribution in, (38) 310.

Lysimeter—

- description, (26) 619.
- investigations, (40) 431.
- role in soil solution studies, (27) 500; (28) 28.
- work, equipment for, (37) 521.

Lysin—

- as supplement for wheat, corn, and oat proteins, (36) 560.
- content of proteins, (31) 559.
- determination in proteins, (26) 22.
- effect on growth, (35) 258.
- in chernozem soils, (35) 212.
- indispensability for growth, (31) 558.
- isolation from soils, (28) 418.
- nitrogen in protein, (33) 201.
- nutritive value, (38) 569.
- occurrence in gliadin and zein, (29) 408.
- occurrence in sugar beets, (28) 810.
- reaction with nitrous acid, (38) 10.
- role in maintenance of young animals, (38) 571.
- role in nutrition of chicks, (34) 871; (36) 372.
- synthesis by mammary gland, (40) 72.

Lysol poisoning in domestic animals, (26) 581.

Lysurus texensis n.sp. and Anthurus borealis, relation, (39) 30.

Lytophilus melanocephalus n.sp., description, (39) 566.

α -D-Lyxose, crystallography and optical properties, (40) 202.

Macacus rhesus, endoparasitic mite in lung of, (31) 356.

Macadam—

- surfaces, raveling of, (31) 785.
- transmission of pressure to subgrade of, (33) 486.

Macaroni—

- analyses and use, (27) 664.
- notes, (27) 765; (31) 658.

Macdonald—

- College, notes, (26) 398; (28) 94.
- Consolidated School, Prince Edward Island, notes, (28) 793.
- Institute of Agriculture and Plant Experiment Station, (40) 500.

Mace, analyses and standards, (36) 466.

Machine design, treatise, (31) 290.

Machinery—*see also* Agricultural machinery. for vine cultivation, tests, (26) 893.

Macrobasis unicolor, *see* Blister beetles, ash-gray.

Macrocentrus—

- aegeriae n.sp., description, (33) 749.
- (Amicroplus) crambivorus n.sp., description, (26) 352.

cerasivornae n.sp., description, (29) 563.

spp. in Great Britain, (32) 454.

Macrocheles muscae n.sp., notes, (30) 757.

Macrocyrtus n.g. and n.spp., descriptions, (28) 561.

Macrocytistis—

- pyrifer, analyses, (31) 823.
- spp., analyses, (27) 422.

Macroductylus—

- subspinosus, *see* Rose chafer.
- uniformis, notes, (26) 452; (33) 746.

Macrodyctium—

- omnidivorum, notes, (26) 758.
- sp., notes, (30) 659.

Macrodonotua onusta, notes (28) 157; (34) 752; (35) 54.

Macroorileya oecanthi, notes, (31) 650.

Macrophages of mammals, definition, (34) 382.

Macrophoma—

- coffea, notes, (38) 51.
- curvispora, notes, (27) 448.
- excelsa infestans, notes, (27) 854.
- sophorae n.sp., description, (27) 848.
- sp., injurious to figs, (26) 449.
- trichosanthis n.sp., notes, (37) 148.
- tumefaciens n.sp., description, (34) 448.
- vestita, notes, (29) 155.

Macrophya n.spp., descriptions, (37) 667.

Macropus longimanus, notes, (28) 250.

Macroscargus cuparius, notes, (33) 58.

Macrosiagon—

- flavipennis, notes, (34) 557.
- octomaculatus, notes, (34) 455.

Macrosiphum—

- antherinii, heredity in, (32) 448.
- British species, (30) 55.
- citrifolii, notes, (26) 755.
- fragariae, notes, (33) 554.
- fragariae, studies, (38) 357.
- granarium, *see* Grain aphid.
- heucherae, notes, (34) 453.
- illinoisensis, life history, (38) 260.
- injurious to peas, (31) 452.
- lactucae, notes, (27) 758.
- n.spp., descriptions, (31) 754.
- (Nectarophora) solanifolii, notes, (28) 554.
- psid, notes, (28) 556.
- psid, predatory enemy of, (30) 459.
- psid, remedies, (32) 652; (34) 755.
- psid, studies, (34) 62; (35) 461.
- solanii, studies, (39) 149.
- solanifolii—
 - notes, (33) 352; (35) 54; (37) 157; (38) 558; (39) 701.
 - relation to spinach blight, (39) 551.
 - studies, (34) 550; (37) 850; (38) 462, 654; (40) 456.
- spp., alternate host habits, (39) 464.
- spp., notes, (28) 854.
- spp. on Rosaceae, (32) 848.
- spp., wing development, (40) 456.
- viticola, life history, (33) 857.

Macrosorium—

- coffeanum, notes, (38) 51.
- commune, growth in plant decoctions, (37) 728.
- commune, nitrogen fixation by, (37) 129.
- eribotryae n.sp., description, (31) 746.
- hesperidearum, n.sp., description, (31) 746.
- infection of wheat by, (26) 747.
- lanceolatum, notes, (36) 348.
- on carrot, (39) 52.
- parasiticum sarcinula, notes, (37) 553.
- sarcinaeforme on red clover, (40) 156.
- sarcinula, treatment, (29) 245.
- solanii, description and treatment, (29) 847.
- solanii in tomato seed, (32) 344.
- solanii, notes, (26) 446; (27) 354; (30) 448; (31) 746; (32) 342; (37) 249.
- somniferi n.sp., description, (40) 155.
- sophorae n.sp., description, (27) 854.
- sophorae n.sp. notes, (40) 160.
- sp., notes, (26) 548.
- sp. on cotton, (32) 642.

- Macrosporium**—Continued.
 sp. on tomatoes, (34) 644.
 sydowianum, notes, (36) 149.
 taxonomic characters, (39) 30.
 tomato, notes, (32) 240; (37) 150.
- Macuna utilis**, notes, (31) 864.
- Madake**, hydropsy of, (35) 354.
- Madia** cakes, effect on milk, (34) 570.
- Madiza conicola** n.sp., description, (40) 757.
- Madura** foot, causative agent, (26) 281.
- Magdalis**—
 armicollis, notes, (27) 256.
 notes, (40) 759.
 pruni (ruficornis), notes, (36) 853.
 synopsis, (30) 357.
 violacea, notes, (28) 750.
- Maggots** affecting animals, (38) 160.
- Magnesia**—
 and lime ratio—
 as affected by concentration, (28) 730.
 effect on plants, (26) 35; (29) 520; (30) 27.
 for plants, (27) 824.
 in grain culture, (30) 519.
 in soils, (28) 425, 812, 820; (29) 730; (31) 31,
 218, 623.
 and lime requirements of plants, (28) 820.
 deficiency in soils, (28) 820.
 determination in limestone, (31) 314.
 displacement by water in leaves, (29) 219.
 distribution in loam soils, (31) 618.
 effect on—
 soils, (30) 220.
 sugar beets, (34) 38.
 sulphur content of soils, (38) 327.
 wheat, (36) 519.
 excess in soils, correcting, (35) 430.
 fertilizing value, (35) 30; (39) 530; (40) 725, 824.
 in New Zealand soils, (35) 715.
 loss from soils, (26) 422; (29) 211.
 mica, decomposition by soil bacteria and yeast,
 (31) 121.
 of feeding stuffs, digestibility, (40) 769.
 relation to lime in soils, (36) 519.
 relation to nitrification and plant growth, (30)
 326.
 requirements of plants, (27) 824; (28) 820.
 requirements of soils, (35) 714.
 rôle in green plants, (27) 332.
 solubility in chrysolite, (40) 812.
 sources for plants, (32) 622.
 toxic action on plant growth, (26) 723.
 toxicity toward tomatoes, (31) 218.
 waste products as source of lime, (38) 22.
- Magnesite**—
 effect on plant growth, (35) 726.
 fertilizing value, (40) 815.
- Magnesium**—
 and calcium, ratio in the diet, (29) 565.
 as affecting chlorophyll formation, (39) 827.
 carbonate, diffusion in soils, (29) 128.
 carbonate, effect on—
 development of *Digitalis purpurea*, (34) 135.
 nitrogen fixation by *Azotobacter chroococ-*
 cum, (33) 427.
 nitrogen transformations, (28) 523.
 plants, (40) 326.
 soil acidity, (37) 23.
 soil potash, (36) 625.
 soils, (38) 520.
 strawberries, (34) 150.
 sulfofying power of soils, (37) 120.
- carbonate**—
 fixation in soils, (31) 25.
 in humid soils, (31) 815.
 relation to soil fertility, (33) 513.
- caseinates**, studies, (31) 709.
- chlorid**, absorption by plants, (35) 435.
- chlorid**, effect on—
 activity of malt diastase, (29) 528.
 development of eggs, (26) 772.
 germination of seeds, (29) 327.
 sheep, (28) 672.
 soils and plants, (35) 423.
- chlorid**, fertilizing value, (27) 125.
- compounds**, effect on plant growth, (35) 726.
- concentration** in subsoil, (31) 720.
- deficiency**, effect on oat plant, (40) 324.
- determination**, (28) 507; (34) 712.
- determination**—
 as magnesium oxid, (26) 607.
- Magnesium**—Continued.
 determination—continued.
 filter for, (38) 506.
 in foods, (29) 809.
 in plants, (29) 797.
 in water, (31) 502; (35) 805; (37) 412.
- effect on**—
Aspergillus spp., (29) 825.
 chlorophyll formation, (35) 435; (36) 225.
 growth of tubercle bacilli, (29) 381.
 excretion as affected by lecithin, (26) 766.
 fertilizer, tests, (28) 735.
 fertilizers, action, (27) 228.
 fertilizing value, (27) 128.
 function in plants, (36) 30.
 glycerophosphate, use against tetanus, (34) 782.
 hypochlorite in surgery, (36) 379.
 hypochlorite, toxicity, (39) 586.
 importance in animal nutrition, (31) 663.
 in Asiatic foodstuffs, (29) 64.
 metabolism of *Aspergillus niger*, (30) 727.
 normal urine, (36) 366.
 soils, solubility, (39) 821.
- inake**, effect on calcium retention by pigs, (29) 66.
- limestone**, fertilizing value, (40) 125.
- metabolism** in dogs, (38) 569.
- metabolism**, studies, (39) 875, 876.
- metabolism**, treatise, (28) 569.
- nitrate**, effect on toxic salts, (30) 31.
- nitrate**, toxicity for squash, (38) 224.
- nutrition** of plants, (40) 726.
- occurrence** in weeds, (26) 432.
- of carrots and spinach** in the diet, (39) 876.
- phosphate**, fertilizing value, (31) 823.
- potassium sulphate**, preparation, (40) 801.
- relation to chlorosis**, (28) 153; (33) 522; (35) 435.
- removal** from soil, (39) 517.
- retention** in growing pigs, (28) 469.
- rôle** in growth of fungi, (29) 28.
- salts**, absorption by plants, (35) 433.
- salts** as coagulant for rubber latex, (26) 141.
- salts** as fertilizers for spinach, (40) 503.
- salts**, effect on—
 action of phosphates, (35) 326.
 action of phosphoric acid, (27) 623.
 activity of lipase, (31) 264.
 ammonia fixing power of soils, (27) 323.
Aspergillus niger, (28) 824.
 canned foods, (34) 67.
 catalase, (26) 504.
 concrete, (29) 891.
 ferments, (26) 309.
 germination and growth of crops, (34) 125.
 growth of rice, (30) 833.
 nitric-nitrogen accumulation, (40) 722.
 soil bacteria, (38) 818.
 solubility of phosphates, (36) 626; (37) 323,
 324.
 wheat, (39) 117.
- salts**, toxicity in soil, (36) 515.
- separation** from calcium, (28) 409.
- sulphate**—
 antiseptic and germicidal value, (37) 176.
 antiseptic value, (39) 680.
 as fertilizer for sugar beets, (30) 234.
- sulphate**, effect on—
 germination of dodder, (27) 28.
 germination of pine seed, (28) 843.
 germination of seeds, (29) 328.
 solubility of phosphates, (28) 818.
 sugar beets, (31) 233.
 wheat seedlings, (31) 426.
- sulphate**—
 fertilizing value, (27) 125; (31) 31; (33) 541;
 (35) 430.
 in nutrient solutions, effect on plant growth,
 (39) 28, 331.
 nitrogen absorption capacity, (28) 325.
 relation to ammonification and concentra-
 tion of soil solution, (39) 323.
 use against tetanus, (26) 783; (27) 381; (29)
 781; (38) 580.
 use for anesthesia, (35) 484.
- toxicity** toward plants, (30) 128.
- v. high calcium limestone**, (39) 127, 220, 622,
 626; (40) 423.
- Magnetic**—
 and meteorologic phenomena, relation, (31) 615.
- black**, effect on linseed oil, (28) 714.
- observations** at Habana, (28) 213; (39) 419.

- Magnetic—Continued.
 storms and rain, correlation, (38) 15.
 storms of August, 1916, (38) 210.
 storms, sun spots, and rainfall, (38) 811.
 Magnetos for farm engines, (38) 893.
 Magnifier, binocular, (36) 97.
- Magnolia—
 cell division in, (40) 518.
 forcing experiments, (28) 435.
 oils of, (37) 109.
 powdery mildew, description, (37) 657.
 Magnolias for northern lawns, (39) 244.
- Magwey—
 binder twine from, (27) 534.
 culture in Philippines, (30) 229, 434.
 production in Philippines, (39) 231.
 standard grades, (36) 634.
- Mahogany—
 and its substitutes, (36) 745; (40) 843.
 borer of Gold Coast, (31) 254.
 experimental plantings, (38) 749.
 insects affecting, (28) 555; (30) 546.
 seedlings, flowering of, (29) 546.
 tests, (33) 536.
- Maiden cane—
 analyses, (35) 831.
 hay, analyses, (26) 362.
- Maine—
 Agricultural and Industrial League, demon-
 stration farm, (40) 500.
 College, history, (36) 594.
- Station—
 abstracts of papers, (37) 396.
 financial statement, (27) 492; (29) 194.
 index to bulletins, (39) 196.
 notes, (26) 796; (27) 98, 697; (28) 600, 696;
 (29) 195, 699; (32) 694; (33) 300; (34) 496,
 600; (35) 96; (36) 98; (37) 497; (38) 299; (40)
 497.
 organization, finances, etc., (39) 196.
 report, (27) 494; (29) 194; (31) 196; (33) 96;
 (35) 299; (39) 196.
 University, history, (36) 594.
 University, notes, (27) 799; (29) 195, 397; (31)
 796, 900; (33) 300; (34) 96, 396, 600, 900; (37) 97,
 497.
- Maize, *see* Corn.
- Mal decaderas—
 immunity to, (29) 379.
 in British Guiana, (30) 685.
 relation to *Triatoma infestans*, (31) 82.
 treatment, (40) 583.
 vector of, (30) 785.
- Mal de Lure in sheep and goats, (27) 887.
- Malachra capitata fiber, tests, (31) 526.
- Malacosoma—*see also* Tent caterpillar.
 americana, *see* Apple tent caterpillar.
 distria, *see* Forest tent caterpillar.
 erosa, notes, (32) 551.
 fragilis in California, (32) 152.
 neustria, egg parasite of, (26) 557.
 spp., notes, (27) 857; (29) 558; (32) 448.
 spp., remedies, (32) 847.
- Malangas—
 culture and analyses, (38) 340.
 culture experiments, (30) 229.
 culture in Cuba, (31) 41.
- Malaria—*see also* Anopheles and Mosquitoes.
 and mosquitoes in eastern North Carolina, (32)
 61.
 bibliography, (33) 560.
 cause and prevention, (33) 656.
 control, (39) 867.
 control—
 by land drainage, (33) 486.
 in Arkansas, (38) 862.
 California, (28) 560.
 Cuba and Panama, (39) 158.
 rice districts, (40) 857, 858.
 Western Hemisphere, (37) 565.
 equine, in Barbados, (37) 483.
 fever, metabolism in, (40) 868.
 handbook, (29) 759.
 in birds, studies, (39) 389.
 in cattle in relation to antirinderpest vaccina-
 tions, (39) 81.
 in Philippines, (33) 859.
 losses to rural industries from, (33) 749.
 notes, (31) 551.
 parasite, development in mosquitoes, (38) 658.
- Malaria—Continued.
 prevention, (30) 486; (31) 292, 756; (35) 887; (36)
 460.
 problem in the South, (33) 255.
 relation to crop production, (37) 57.
 studies, (40) 356.
 tertian, relation to Anopheles, (39) 156.
 transmission—
 by Anopheles, (34) 358; (35) 360, 361; (40) 552
 bedbugs, (31) 550.
 Egyptian Anopheles, (40) 262.
 mosquitoes, (29) 856.
 experiments, (33) 859; (36) 757.
 treatise, (33) 155, 156.
 winter carrier, (37) 463.
- Malarial—
 anophelines, key, (39) 867.
 anophelines, studies, (40) 168.
 parasites, culture in vitro, (30) 481, 781.
 parasites, resistance to cold, (36) 858.
 plasmodia, cultivation in vitro, (28) 179.
- Malate, action on isolated intestine, (37) 471.
- Malcolmia africana, analyses, (33) 466.
- Male fern as vermifuge, (38) 884.
- Malic acid—
 assimilation by plants, (31) 426.
 behavior toward oxidizing agents, (26) 25.
 decomposition by sunlight, (30) 431.
 determination, (26) 509, 710; (27) 112.
 determination in—
 fruit juices, (32) 297.
 fruit products, (27) 497.
 presence of tartaric acid, (28) 24; (38) 805.
 roselle, (29) 161.
 urine, (36) 468.
 wine, (30) 13.
 effect on carbon assimilation of plants, (27) 525.
 effect on fungi, (28) 444.
 occurrence in honey, (28) 166.
 optical rotation, (27) 497.
 reaction of, (33) 414.
 secretion by *Cicer arietinum*, (34) 525.
 studies, (27) 309.
 toxicity, (28) 661.
 utilization by higher plants, (29) 423.
- Malignant—
 growths, meiostagmin reaction with, (31) 178;
 (33) 280.
 growths, serum reactions with, (26) 676.
 growths, treatment, (29) 476.
 new growth, transmission, (28) 287.
- Mallard ducks, food habits, (40) 254.
- Mallein—*see also* Glanders.
 action of, (33) 773.
 curative action in secretion of the nose, (30)
 579.
 diagnostic value, (26) 177, 578, 676; (31) 879.
 effect on blood of horses, (29) 284.
 effect on diagnosis in glanders, (30) 686, 881.
 eye dropper, description, (32) 580.
 precipitant for, (26) 483.
 reaction, intrapalpebral, (38) 886.
 reaction on sound horses, (33) 479.
 test, intradermal, notes, (31) 177.
 test, notes, (27) 782; (28) 587.
 toleration in horses, (27) 883.
 use, (32) 180.
- Malleinization, historical survey, (39) 890.
- Mallophaga—
 affecting domestic animals in Australia, (29) 757.
 affecting fowls, (33) 353.
 distribution and species forming among, (29) 53.
 new, from North American birds, (38) 761.
 notes, (36) 552.
 of North American mammals, (36) 253.
 systematic nomenclature, (37) 461.
- Mallow—
 caterpillar, life history, (38) 562.
 Jews', culture in Egypt, (34) 232.
 rust, biology, (32) 54.
 rust, development, (30) 453.
 rust, hereditary transmission, (31) 646.
 wild, coloring matter of, (34) 710.
- Malnutrition—*see also* Underfeeding.
 and disease, correlation, (32) 358.
 and toxicity in plants, discussion, (33) 725.
 effect on energy metabolism, (32) 664.
 tissue alteration in, (36) 763.
- Malonylguanidin as precipitant for furfural, (36)
 318.

- Malophagus ovinus* in South Australia, (31) 853.
- Malt—**
 amylase, action of bromid on, (37) 614.
 amylase, action on soluble starch, (37) 613.
 amylase, studies, (40) 504.
 culms in ration, effect on bulk of manure, (40) 126.
 diastase as affected by chlorids, (29) 528.
 diastase, saccharification, (31) 806.
 dust as feeding stuff, (30) 556.
 dust, ground, analyses, (33) 870.
extract—
 amylases of, (31) 410.
 commercial products from, (32) 854.
 effect on autolysis of coagulable proteins, (28) 504.
 effect on growth of rats, (34) 258.
 examination, (31) 67.
 homemade, for nursing mothers, (29) 162.
 prevention of polyneuritis by, (31) 762.
 germ, analyses, (26) 165, 363; (27) 570.
 grains, analyses, (34) 665.
 grains, dried, analyses, (35) 562.
 methods of analysis, (32) 314.
 phosphatases in, (34) 502.
 preparations, examination, (30) 669.
 root disease, new, description, (26) 647.
 saccharification by its own diastase, (29) 505.
 screenings, analyses, (33) 371.
 soup extract in infant feeding, (36) 264.
sprouts—
 analyses, (26) 72, 165, 267, 665; (27) 68, 170, 570, 670, 774, 872; (28) 265, 364, 464, 669; (29) 270, 367, 471, 570, 666, 769; (30) 67, 68, 868; (31) 73, 168, 366, 467, 663, 766; (32) 169, 259, 568, 667; (33) 71, 371, 568, 870; (34) 72, 263, 371, 467, 665; (35) 562, 867; (36) 167, 268, 667; (37) 268, 471; (38) 67, 369, 665; (39) 167, 270, 370; (40) 665.
 ash analyses, (29) 861.
 composition, (26) 24.
 effect on milk, (34) 471.
 feeding value, (26) 72.
 methods of analysis, (29) 311.
 starch-forming enzyme of, (33) 312.
 tropion, effect on fat content of goat's milk, (31) 673.
 valuation, (34) 318.
 vinegar, standards, (27) 808.
- Malta fever—**
 cause, (27) 379.
 control in Malta, (26) 782.
 diagnosis, (27) 379, 380; (30) 578, 781; (31) 878; (32) 276.
 immunization, (26) 183; (39) 81.
 in Arizona, (27) 884; (30) 281.
 in goats, investigations, (29) 780.
 in Louisiana, (30) 281.
 notes, (29) 285.
 organism, studies, (39) 289.
 prevalence in France, (26) 377.
 prevalence in the Gard, (26) 84.
 sero-diagnosis, (26) 782.
 treatise, (36) 382.
- Maltase—**
 as affected by antiseptics, (28) 503.
 distribution and function in plants, (35) 413, 414.
 formation and regulation by mold fungi, (31) 730.
 in alfalfa, (32) 411.
 in cereals, (31) 204.
 in resting potato tubers, (35) 634.
 retention in blood serum of hungry and fed animals, (30) 670.
- Malted milk, microanalysis, (40) 509.**
Malting operations, barley substitute in, (40) 808.
Malting power of barley, (39) 232.
- Maltose—**
 absorption in the intestines, (28) 763.
 acetylated derivatives, optical rotatory powers, (36) 202.
 and glucose, comparison, (31) 762.
 determination, (26) 709; (34) 611.
 determination in plants, (35) 206.
 determination in presence of other sugars, (32) 112.
 effect on action of alcohol on plant cells, (34) 333.
 effect on ammonification, (28) 718.
 heat of combustion, (26) 160.
 hydrolysis by hydrochloric acid, (33) 803.
- Maltose—Continued.**
 in acid hydrolyzed starch products, (28) 312.
 in malt sprouts, (26) 24.
 resorption in small intestine, (29) 268.
 solutions, turbidity, (36) 808.
 Malukang butter, detection, (29) 613.
 Malvaceae, oils and fiber of, (36) 803.
 Malvin, studies, (34) 710.
- Mamestra—**
 brassicae, egg parasite of, (26) 557.
 picta, *see* Zebra caterpillar.
 trifolii, *see* Clover cutworm.
- Mammæ—**
 inheritance in Duroc Jersey swine, (29) 470.
 inheritance in pigs, (28) 570, 574.
 secretion as factor in onset of labor, (27) 186.
- Mammalian—**
 chromosomes, fixation, (40) 662.
 hybrids, fertility of, (28) 667.
 tissue, growth in vitro, (33) 267.
- Mammals—*see also* Animals and specific animals.**
 artificial impregnation of, (29) 66.
 blood parasites of, (33) 152.
 British, history, (27) 51; (31) 248.
 Canadian, trypanosomes of, (27) 81.
 coat pattern in, (32) 466.
 color inheritance in, (37) 866; (38) 776.
 correlation between number of mammae and size of litter, (31) 764.
 domestic, supranal capsules of, (28) 778.
 fur-bearing, of North America, (29) 70.
 game, protection, (32) 447.
 germ-free, raising, (33) 310.
 hair and hair coat system, (27) 369.
 inheritance of color, (40) 869.
 inheritance of fertility, (40) 662.
 injurious to cacao, (27) 53.
 injurious to coconuts, (27) 857.
 larger North American, (36) 354.
 macrophages of, (34) 382.
 male, accessory reproductive glands, (27) 369.
 male, production of feminine characteristics in, (28) 173.
 morphology and function of epithelium of uterine cornua, (28) 875.
 natural diets and alimentary canal of, (28) 571.
 nematode parasites of, (36) 753.
 new, from Arizona and Colorado, (39) 654.
 new, of Mexico and Arizona, (34) 850.
 new, of North and Middle America, (37) 757.
 normal pulse rate of, (29) 66.
 of America, treatise, (38) 652.
 eastern Massachusetts, handbook, (33) 152.
 Great Britain, (36) 852.
 Great Britain, history, (35) 252, 656.
 Great Britain, treatise, (34) 57.
 Lake Maxinkuckee region, (27) 356.
 lower Colorado Valley, (34) 547.
 North America, treatise, (37) 658.
 North Dakota, (32) 549.
 West Indies, list, (26) 652.
 western Europe, catalogue, (30) 850.
 western Montana, relation to agriculture and spotted fever, (27) 52.
 parasites of, (26) 882.
 pattern development in, (32) 766.
 small, of North America, (39) 759.
 studies on number of nipples in, (38) 65.
 ungulate, in British Museum, (30) 767.
 weight of heart, (28) 778.
 weight of lungs, (29) 476.
 wild, domestication and acclimatization, (26) 668.
 wild, of Canada, (37) 757.
- Mammary—**
 botryomycosis in mares, (31) 184.
gland—
 enzymes in, (32) 411.
 extract, effect on milk production, (37) 173.
 lactase of, (30) 204.
 secretion as affected by animal extracts, (28) 370.
 secretion as factor of safety for the suckling, (40) 661.
 secretion in, (27) 375.
 secretion, physiology, (39) 678, 679.
 studies, (40) 467.
 synthetic capacity, (40) 72.

Mammitis—

bovine, (35) 681, 682; (39) 84, 593.

bovine—

immunization, (30) 684.

leucocyte test for, (31) 299.

of human origin, (31) 482.

therapeutics of, (29) 600.

treatise, (39) 890.

effect on enzym content of milk, (27) 257.

effect on milk, (32) 478.

following foot-and-mouth disease, (33) 180.

gangrenous, in sheep and goats, immunization, (30) 83.

milk, detection, (28) 680; (39) 111.

milk, hemolytic action, (27) 782.

necrotica, unusual complication of, (26) 284.

notes, (31) 676.

streptococcic, prevention, (26) 683.

studies, (40) 87.

treatment, (32) 184, 479; (37) 277; (38) 283; (40) 778.

tuberculous, in cows, (38) 183.

Mamon as stock for cherimoya and atemoya, (32) 143.**Man—**

albinism in, monograph, (31) 467.

animal parasites of, (36) 354.

as a machine, treatise, (31) 662.

as affected by muscular work, (28) 168.

basal energy requirements, (35) 371.

calorimetric observations on, (27) 367; (30) 262; (32) 257; (33) 756.

color inheritance in, (40) 870.

dietary studies, (27) 666.

digestion experiments, (28) 564; (29) 865; (31) 65, 161; (34) 167, 659.

double formations or composite monsters of, (27) 576.

embryonic deformities in, (27) 274.

fasting experiments, (27) 465, 466.

food requirements, (28) 260.

fungus parasites of, (32) 271.

growth of the body, (40) 872.

hog erysipelas affecting, (29) 780.

idosyncracies toward diet, (27) 466.

immunization against tuberculosis, (29) 884.

infection with avian tuberculosis, (26) 583.

inheritance in, (28) 876; (29) 769.

insects affecting, (27) 53, 453, 552; (28) 248, 554; (29) 252; (30) 53; (32) 448; (33) 746; (34) 651; (35) 853; (37) 560; (38) 459.

insects affecting, treatise, (33) 856; (37) 156, 760.

lime requirements, (30) 367.

malta fever affecting, (26) 84.

measurement of surface area, (34) 68; (35) 369; (36) 64.

mechanical efficiency, (32) 258.

Mendelian characters in, (28) 370, 531.

metabolism during rest, (32) 165.

metabolism experiments, (26) 161, 764, 865; (27) 366, 666; (28) 868; (29) 62, 164, 165; (31) 362, 465; (33) 754; (34) 68; (37) 266.

parasitic amebae of, (26) 375.

plague-like disease of brown squirrels affecting, (34) 355.

power, measuring, (27) 666.

purin metabolism in, (29) 63; (33) 263.

respiration experiments, (23) 559; (34) 290.

sex determination in, (26) 773.

skull measurements, (27) 69.

stomach movements in, (28) 567.

temperature fluctuations in, (27) 768; (32) 564.

tick paralysis in, (30) 182.

urine and other excretions of, treatise, (23) 480.

working power as affected by breakfast and caffeine, (39) 68.

Manatee—

grass, analyses, (40) 862.

use as food, (40) 882.

Mandarin—

black spot, notes, (31) 843.

black spot, treatment, (32) 445.

brown spot, notes, (34) 644.

brown spot, treatment, (37) 352; (38) 455.

Mandelic nitrile, effect on plant growth, (37) 632.**Manganese—**

agrobiologic studies, (27) 500; (28) 30, 626.

and iron, antagonistic action on wheat, (33) 731.

as fertilizer, (28) 523.

as fertilizer for sugar beets, (27) 643; (35) 736.

Manganese—Continued.

as plant food, (34) 306.

carbonate, fertilizing value, (28) 735; (33) 326; (34) 331.

carbonate, oxidation by microbes, (32) 514.

chlorid as treatment for night soil, (26) 425.

chlorid, effect on plant growth, (35) 434.

compounds—

effect on growth of sugar beets, (31) 126.

effect on nitrification, (34) 623.

fertilizing value, (27) 327.

solubility in soils, (37) 18.

toxicity toward plants, (33) 327.

concentration in surface soils, (31) 720.

determination, (26) 109, 311; (38) 204.

determination in—

drinking water, (31) 806.

minerals and rocks, (31) 16.

plants, (29) 797.

rocks, slags, etc., (30) 505.

soils, (28) 111, 204; (31) 206.

water, (26) 21.

dioxid, effect on germination of seeds, (29) 528.

dioxid, fertilizing value, (36) 220.

effect on—

Aspergillus spp., (27) 129, 228; (29) 30.

formation of chlorophyll, (29) 323.

hemp, (33) 432.

legume bacteria, (29) 733.

metabolism of Aspergillus niger, (30) 630.

nitrogen fixation by plants, (38) 122.

nodule bacteria of legumes, (33) 820; (34) 31.

pineapples, (27) 842; (36) 538, 546.

plant cells, (27) 826.

plant growth, (27) 129; (28) 328; (30) 823, 824; (32) 129; (36) 520.

plants, (36) 432.

potatoes, (35) 634.

seed germination, (26) 131.

soils and plants, (40) 820.

sugar beets, (34) 38.

vegetation, (33) 30.

fertilizers, notes, (31) 220.

fertilizing action, (26) 727; (27) 628, 629.

fertilizing value, (27) 128, 500; (28) 34, 125, 820; (39) 749.

in acid soils, (39) 627; (40) 728.

animal organs, (30) 562.

animals, (27) 500, 670.

insect flowers and flower stems, (38) 206.

Kentucky soils, (31) 720.

laxative drug plants, (38) 506.

leaves, (29) 628.

leguminous plants, (37) 28.

natural waters, (35) 424.

pineapple soils, (29) 210.

plants, (27) 830; (29) 28; (30) 30, 31; (38) 499.

plants and animals, (31) 220.

raw linseed oil, (28) 714.

South Australia soils, (31) 720.

the blood, (30) 562.

vegetable food products, (32) 628.

weeds, (26) 432.

wheat, (34) 339.

occurrence and rôle in plants, (37) 130.

oxid as fertilizer, (27) 726.

oxid, effect on nitrogenous compounds, (27) 726.

phosphate, fertilizing value, (31) 823.

relation to chlorosis, (33) 522.

relation to protein formation in plants, (33) 725.

removal from ground water, (27) 511.

rôle in growth of Aspergillus niger, (29) 219.

salts, effect on—

ammonification and nitrification, (36) 326; (37) 126.

catalase, (26) 504.

ferments, (26) 309.

growth of sugar beets, (35) 217.

nitric-nitrogen accumulation, (40) 722.

solubility of phosphates, (37) 323.

sugar beets, (31) 233.

wheat, (31) 218.

salts, fertilizing value, (30) 627, 824; (32) 725.

salts, toxicity in soil, (36) 515.

slag, fertilizing value, (38) 723.

soil concretions due to, (32) 215.

solubility in soils, (28) 813.

sulphate, action in wine fermentation, (33) 507.

Manganese—Continued.

- sulphate, effect on—
 - ammonification, (28) 724.
 - castor bean lipase, (29) 713.
 - germination, (30) 332.
 - growth of barley, (32) 121.
 - nitrogen-fixing bacteria, (38) 429.
 - plant growth, (30) 130.
 - plants, (27) 130.
 - powdery mildew infection, (33) 244.
 - soil acidity, (37) 23.
 - sugar beets, (26) 225.
 - vegetation, (26) 226.
- sulphate—
 - fertilizing value, (26) 126; (27) 628; (29) 151; (31) 31; (34) 331, 632; (36) 124; (39) 729; (40) 440.
 - for grapes, (29) 838.
 - hydrolysis and oxidation in soil, (39) 522.
 - toxicity toward plants, (30) 128; (38) 628.
- Manganous phosphate, fertilizing value, (36) 626.
- Mange—*see also* Cattle, Dog, Horse, and Sheep mange or scab.

- acari, detection, (33) 281.
- demodectic, in swine, (37) 477.
- parasitic, (40) 683.
- parasitic, in England, (32) 271.
- parasitic, in Great Britain, (34) 382; (36) 378.
- parasitic, treatment, (39) 683.
- treatment, (35) 279; (39) 489, 683.

Mangel—

- aphids, notes, (29) 454.
- crown gall, notes, (27) 649; (34) 844.
- diseases, notes, (32) 544; (36) 47, 541.
- fly, *see* *Pegomyia hyoscyami*.
- juice, thickened, carbon dioxide formation in, (40) 615.
- leaves as source of potash, (34) 327.
- leaves, carbohydrates in, (28) 128.
- rot, notes, (26) 446.
- seeds in Denmark, (37) 742.

Mangels—

- analyses, (26) 132; (27) 334, 469, 672; (28) 463; (32) 166, 465; (33) 759; (35) 562; (36) 65; (37) 233; (38) 665, 666.
- analyses and feeding value, (32) 461.
- and sugar beets, comparative yields, (40) 431.
- aphids affecting, (28) 252.
- as affected by spacing, (31) 633.
- silage crop, (39) 134.
- substitute for concentrates for cows, (33) 174.
- winter feed for poultry, (32) 570.
- ash analyses, (29) 861.
- Barres, history in Denmark, (37) 736.
- calcium cyanamid for, (31) 524.
- carbohydrates in, (36) 125.
- composition as affected by fertilizers, (31) 736.
- composition as affected by sodium salts, (29) 420.
- composition during storage, (32) 121.
- continuous culture, (29) 227.
- cost of production, (26) 637; (27) 530; (28) 41; (32) 530.
- culture, (27) 32, 435; (28) 42; (31) 35.
- culture—
 - experiments, (26) 329; (27) 33; (28) 531; (29) 427; (30) 133; (32) 132, 430, 431; (33) 830; (34) 34, 228; (36) 32, 436; (37) 230, 435, 733; (38) 536, 825; (39) 229, 437; (40) 625, 735.
 - in Antigua, (40) 522.
 - Montana, (33) 526.
 - Rhodesia, (27) 32, 637.
 - South Dakota, (40) 32.
 - on moor soils, (40) 523.
 - on muck soils, (33) 33.
- digestibility, (39) 171.
- dry matter content, (26) 436; (31) 233.
- effect on following crop, (40) 623.
- effect on milk and butter, (34) 570.
- electroculture, (27) 231; (28) 533; (40) 428.
- ether extract of, (28) 201.
- feeding value, (38) 665; (39) 777.
- fertilizer experiments, (26) 231, 324, 330, 436, 537, 630, 631, 632, 833, 835; (27) 32, 334, 422, 530, 724, 832; (28) 533; (29) 125, 213, 227, 228, 319, 830; (30) 134, 428, 437, 632, 637; (31) 133, 328, 829; (32) 431, 532, 630; (33) 326, 831; (34) 519; (36) 121, 425, 529, 735, 833; (37) 533; (39) 621, 738; (40) 622, 735.
- for cows, (29) 577; (38) 477.

Mangels—Continued.

- from same seed ball, characteristics, (31) 633.
- home-grown seed, (40) 340.
- inheritance of sugar and dry matter in, (29) 270
- insects affecting, (26) 553.
- irrigation experiments, (27) 531; (31) 732.
- liming experiments, (30) 724; (31) 820; (40) 322.
- manurial value of tops, (39) 836.
- new scheme for fertilizing, (26) 630.
- poisoning of cattle and pigs by, (27) 780.
- production and use, (26) 132.
- radioactive fertilizers for, (31) 31, 129.
- reducing and nonreducing sugars in, (29) 111.
- relation between size of seed and yield, (26) 434.
- relation between weight, specific gravity, and dry matter content, (26) 437.
- seed from different sources, (40) 735.
- seed production, (33) 226.
- seeding experiments, (29) 224, 432.
- selection experiments, (37) 32.
- silaging, (40) 431.
- sliced, fermenting with lacto-pulp, (27) 170.
- steaming, (39) 269.
- sugar content as affected by sodium manures, (28) 34.
- thinning experiments, (29) 432.
- v. corn for forage, (28) 41.
- v. silage for milk production, (34) 670.
- v. sugar beets for western Nebraska, (32) 224.
- varieties, (26) 232, 331, 436, 537, 631, 835; (27) 32, 334, 531, 637, 736; (29) 228, 530, 830; (30) 33, 134, 834; (31) 133, 736, 829; (32) 37, 132, 431, 528, 532, 630; (33) 33, 330, 631; (34) 229, 865; (35) 637; (36) 133, 735; (37) 32, 228; (38) 31, 432.
- varieties, classification, (27) 31.
- variety tests, (39) 128, 336, 442, 634; (40) 431, 735
- yield as affected by wind-breaks, (28) 40.
- yield of total nutrients, (39) 336.
- yield on alfalfa stubble, (33) 828.
- yields, (39) 334; (40) 734.

Mangers—

- construction, (28) 386.
- sanitary, for dairy barns, (33) 489.
- Mangifera indica*, new beetle affecting, (26) 151.
- Manginia ampelina*, studies, (40) 850.

Mango—

- anthracnose, notes, (27) 750; (35) 153.
- anthracnose, studies, (30) 451.
- bacterial disease, (29) 45; (30) 747; (34) 242, 447, bark borer, notes, (29) 457.
- black spot, studies, (39) 149.
- disease in Yucatan, (37) 755.
- diseases, algal, (40) 48.
- diseases and pests in Mysore, (37) 657.
- diseases, treatment, (26) 841.
- fruit disease, notes, (34) 442; (37) 838.
- fruit fly, notes, (26) 354; (27) 359; (29) 453; (40) 56.
- hopper, remedies, (38) 360.
- mildew, notes, (38) 548.
- rash, notes, (33) 164.
- seed weevil, notes, (27) 255.
- tree borer, notes, (40) 655.
- weevil, notes, (27) 759; (32) 352.

Mangoes—

- analyses, (32) 761.
- analyses and use, (30) 363.
- artificial cross fertilization, (27) 844.
- bark grafting, (35) 538.
- black fly on, (39) 864.
- breeding experiments, (37) 142.
- classification, (32) 745.
- cold storage of, (32) 439.
- culture, (31) 339; (33) 342; (35) 542.
- culture—
 - and canning, (35) 556.
 - experiments, (27) 143; (32) 742; (36) 340; (40) 339.
 - in California, (26) 743.
 - Guam, (30) 41.
 - India, (29) 42.
 - Philippines, (34) 635.
 - Porto Rico, (38) 747.
- East Indian varieties, tests, (33) 535.
- embryony of, (26) 841.
- flowering and pollination, (35) 538.
- fungus diseases of, (26) 445.
- germination tests, (36) 340.
- history in Florida, (37) 745.
- host plant of fruit fly, (26) 758.

Mangoes—Continued.

- improvement, (38) 842.
- in Porto Rico, (40) 44.
- insects affecting, (26) 354, 841, 856; (27) 453, 857; (34) 349; (36) 457.
- new beetle affecting, (26) 151.
- pollination, (37) 835.
- propagation and grafting, (29) 234.
- propagation by inarching, (31) 441; (32) 741; (37) 743.
- recipes, (28) 660, 863.
- salt as fertilizer for, (32) 324.
- scale insects affecting, (26) 553.
- treatise, (26) 841.
- varieties, (27) 842; (29) 637; (34) 40.

Mangosteens—

- analyses and use, (30) 363.
- disease of, (33) 545.
- diseases, treatment, (36) 347.
- notes, (33) 841.

Mangrove—

- barks as source of tannin extracts, (28) 146.
- borer on casaurina, (40) 860.
- forests of British India, (40) 46.
- leaf sap, osmotic concentration, (37) 632.
- red, ecology and physiology, (37) 821; (38) 823.
- red, physiological studies, (39) 122.
- tannin extract, manufacture, (27) 210.

Mangroves—

- culture in Barbados, (28) 828.
- sap concentration, (40) 130.
- transpiration and osmotic pressure in, (30) 30.

Mani cimarrona, culture, (34) 736.

Manihot—

- disease, notes, (28) 552.
- glaziovii—
 - anatomy, (27) 44.
 - blooming habit and seed production, (28) 744.
 - collection of latex from, (26) 444.
 - culture in East Africa, (30) 239.
 - culture in Middle Kongo, (33) 646.
 - culture in Uganda, (35) 544.
 - insects affecting, (28) 555.
 - latex of, (31) 128.
 - new coagulant for, (26) 141.
 - plantings in Kongo, (26) 50.
 - tapping experiments, (26) 443, 745; (29) 843; (31) 241.

Manila—

- fibers, distinguishing in rope, (39) 15.
- rope fastenings, tests, (33) 190.
- rope, manufacture, (29) 86.
- wastings, analyses, (28) 523.

Manimanihan, notes, (26) 362; (30) 230.

Manioc, *see* Cassava.

Manitoba Agricultural College, notes, (34) 498.

Manna—

- ash, composition and adulteration, (33) 443.
- Boer, varieties, (30) 435.
- in gymnosperms, (37) 710.

Manniophyton africanum, description, (28) 829; (30) 35.

Mannite—

- antizymotic action, (34) 815.
- as source of carbon for molds, (30) 226.
- determination, (26) 709.
- effect on ammonification, (28) 718.
- effect on nitrate formation, (36) 321.
- estimation, (33) 612.
- extraction from asparagus juice, (27) 502; (31) 10.
- in silage and its use in explosives, (37) 801.
- isolation from soils, (28) 418.

Mannitol—

- decomposition by *Bacillus coli communis*, (38) 709.
- in *Fucus* and *Laminaria*, (29) 566.
- in silage, (39) 107.
- occurrence in palm saps, (30) 16.

d-Mannoketohexose, chemistry of, (37) 9.

Mannose—

- crystalline, preparation and mutarotation, (37) 201.
- toxicity for green plants, (38) 224.

Manomera blatchleyi, notes, (40) 353.

Manometer, use, (28) 631; (29) 422.

Mansakia n.g. and n.sp., description, (38) 857.

Mansonia—

- eggs and oviposition in, (36) 552.
- humeralis n.sp., description, (36) 552.
- titillans in Canal Zone, (40) 653.

Manual training—

- in elementary schools, (29) 297.
 - graded schools, (34) 599.
 - high schools, (31) 394.
 - Iowa schools, (35) 592.
 - New Mexico, (29) 92.
 - rural schools, (34) 395.
 - schools, (30) 794.
 - Wisconsin, (33) 195.
 - instruction in Great Britain, (30) 299.
 - outlines in, (33) 297.
 - teacher training school in, (30) 597.
- Manure—*see also* Cow, Poultry, Sheep, etc.
- abattoir, composition and use, (39) 117.
 - action, (26) 424.
 - after effect, (29) 729.
 - analyses, (26) 715; (28) 266; (31) 122; (32) 568, 819; (34) 517; (36) 120; (38) 23, 411; (39) 217.
 - analyses and use, (34) 519.
 - and fertilizers, handbook, (28) 538.
 - fertilizers, textbook, (30) 24.
 - nitrification in the soil, (40) 723.
 - products of decomposition, (37) 813.
 - application, (32) 818; (34) 517; (36) 325; (38) 829.
 - applying with green manures, (32) 721.
 - artificial, fertilizing value, (31) 732.
 - as affected by—
 - cake feeding, (30) 125.
 - litter, (26) 424.
 - maggot traps, (39) 562.
 - sulphur, calcium sulphate, and acid phosphate, (38) 19.
 - as nutrient for soil bacteria, (34) 327.
 - phosphatic fertilizer, (39) 427.
 - source of energy in nitrogen fixation, (32) 515.
 - source of phosphoric acid, (26) 123.
 - top-dressing for hay, (28) 325.
 - ash, analyses, (35) 328.
 - ash, fertilizing value, (36) 228.
 - availability of nitrogen in, (35) 123; (39) 817.
 - bacteriological-chemical investigations, (28) 220.
 - bacteriological tests for, (26) 322.
 - baladi and kufri, fertilizing value, (38) 233.
 - boron-treated, (39) 429.
 - boron-treated, use, (34) 626.
 - broadcasting v. hill fertilizing, (39) 520.
 - care and use, (30) 628.
 - changes in storage, (31) 320; (39) 216.
 - collection from cities, (37) 521.
 - compensation for under tenancy, (29) 420.
 - composition, (27) 420.
 - composition and use, (38) 423.
 - composition and value, (33) 516.
 - conservation, (36) 723, 817.
 - conservation and use in Pennsylvania, (39) 117.
 - conservation as affected by bedding material, (39) 621.
 - decomposition, (35) 426.
 - decomposition in soil, (38) 623.
 - destruction of fly larvae in, (26) 656; (37) 853.
 - determination in milk, (39) 882.
 - disposal in cities, (30) 720.
 - disposal in relation to livestock diseases, (37) 780.
 - distribution and utilization of active principles, (28) 124.
 - effect on—
 - action of fertilizers, (26) 522.
 - apples, (29) 438.
 - availability of phosphates, (28) 815; (38) 325; (39) 118, 625, 822.
 - bacterial activity in soils, (26) 31; (31) 121; (32) 216; (35) 216.
 - botanical composition of herbage, (33) 227.
 - burning quality of tobacco, (38) 239.
 - composition of beets, (31) 736.
 - composition of cereals, (34) 230; (37) 827.
 - composition of meadow hay, (34) 620.
 - composition of soils, (29) 416, 417.
 - composition of wheat, (28) 140.
 - corn, (37) 440.
 - decomposition of green manure, (32) 514; (34) 129; (36) 817; (39) 725.
 - foot-and-mouth disease virus, (29) 283.
 - germination of *Orobanche crenata*, (31) 634.
 - grapes, (31) 339.
 - grass lands, (30) 133.
 - inoculated soil, (39) 519.
 - irrigated corn, (31) 428.
 - lime requirement of soils, (28) 122; (37) 125.
 - maturity of cotton, (31) 40.

Manure—Continued.

effect on—continued.

- nitrification in soils, (36) 118.
- nitrogen balance in soil, (37) 627.
- nitrogen content of soil, (36) 218; (38) 213.
- nodule production in soy beans, (40) 828.
- oats, (39) 639.
- peach trees, (37) 40.
- retention of bases by soils, (32) 121.
- salts and nitrates in soil, (36) 816.
- "slick spots," (39) 229.
- soil acidity, (37) 23; (38) 20.
- soil bacteria, (27) 518; (35) 814; (37) 23, 120.
- soil fertility, (29) 317.
- soil moisture, (38) 320, 321; (39) 617.
- soil nitrogen, (35) 218.
- soil temperature, (29) 620.
- solubility of inorganic soil constituents, (37) 422.
- tobacco quality, (38) 37.
- yield of apples, (26) 541.

export from India, (33) 327.

fermentation, (36) 23.

fermentation, prevention, (26) 724.

fermenting, effect on phosphates, (29) 23.

- fertilizing values, (26) 129, 233, 323, 329, 330, 424, 522, 534, 535, 536, 629, 630, 638, 639; (27) 137, 336, 337, 420, 519, 530, 532, 534, 832, 834, 835; (28) 42, 47, 124, 125, 221, 325, 338, 520; (29) 32, 35, 227, 427, 632, 737, 830, 831; (30) 134, 230, 526, 731, 820, 821, 829, 835; (31) 37, 122, 124, 517, 820, 829, 893; (32) 530, 629; (33) 432, 516, 624, 625, 722, 729, 731, 732, 828, 830, 831; (34) 128, 219, 621, 630, 723, 735; (35) 22, 30, 125, 323, 438, 519, 535, 536, 629, 815; (36) 121, 217, 228, 425, 528, 533, 623, 735, 829, 839; (37) 214, 229, 320, 534, 626, 731; (38) 33, 36, 120, 133, 134, 217, 218, 219, 228, 238, 239, 244, 298, 337, 422, 431, 432, 438, 534, 620, 630, 634, 825; (39) 22, 32, 116, 130, 137, 227, 334, 434, 435, 436, 437, 445, 446, 529, 530, 531, 725, 745, 816, 817, 834; (40) 135, 228, 229, 319, 331, 333, 422, 429, 430, 431, 432, 516, 630, 636.

for apples, (33) 240.

arid soils, (34) 621.

coffee, (31) 637.

grass lands, (29) 531; (32) 630.

greenhouse crops, (40) 739, 741.

hops, (29) 534.

meadows, (33) 330.

Missouri soils, (33) 212, 213, 214, 215.

moor soils, (40) 230.

muck soils, (33) 33.

mushrooms, (26) 440.

peat soils, (37) 720.

sweet potatoes, (31) 437.

wheat, (40) 730, 731.

formation of coloring matter of, (30) 28.

freight rates on, (34) 392.

fresh and decomposing, bacteriology, (39) 23.

gain of nitrogen in, (36) 217.

handling, (39) 621.

heap as affected by snow, (39) 427.

heap, caring for, (40) 24.

humification, (31) 120.

infusion, effect on ammonification, (28) 724.

inoculating alfalfa with, (29) 332.

kraal, analyses, (40) 621.

liquid—

- action as affected by distribution in soils, (35) 518.
- analyses, (31) 421.
- assource of potash, (34) 327; (37) 817.
- composition, (34) 23, 24.
- fertilizing value, (29) 427; (33) 25, 218, 219; (34) 23, 820; (35) 126; (36) 529; (37) 739; (39) 438.
- injurious to fish, (29) 821.
- loss of ammonia from, (31) 421.
- loss of nitrogen from, (34) 517.
- mixing with peat dust, (37) 216.
- preservation, (30) 427; (40) 723.
- tank for, (39) 519.
- utilization, (34) 298.

loss of nitrogen from, (26) 522; (35) 426.

losses from, (33) 722.

making and storing, (39) 519.

making experiments, (31) 767.

methods of applying, (38) 218.

nitrification in the field, (39) 520.

Manure—Continued.

nitrogen-assimilating organisms in, (38) 27.

nitrogen availability, (40) 125.

nitrogen fixation in, (38) 325.

notes, (28) 736; (31) 122.

on acid soils, (39) 326.

on alkali soils, (39) 215.

organic and inorganic, comparison, (35) 425.

organic, efficiency in dry years, (30) 626.

organic, nitrification, (31) 723.

paunch, analyses, (26) 715.

peat litter v. straw for, (33) 817.

pit, fertilizing value, (33) 131.

pits and equipment, plans, (38) 693.

pits and tanks, (38) 86.

pits, concrete, construction, (27) 89.

preservation, (27) 623; (28) 325, 424; (33) 325, 722; (38) 19.

produced by steers on different rations, (40) 126.

production, composition, and value, (28) 722.

reinforcing with phosphates, (34) 621.

relation to grape red spot, (26) 145.

residual effects, (26) 331; (31) 319, 516; (34) 22; (36) 829; (37) 133; (38) 218, 432, 527.

review of investigations, (27) 128.

rock rabbit, analyses, (40) 621.

sampling device for, (37) 711.

secondary effects on soil, (32) 121; (40) 515.

sheds, concrete, construction, (30) 175.

solid and liquid, handbook, (30) 125.

spreader with moving box bottom, (27) 588.

spreaders, liquid, tests, (30) 292.

spring v. winter application, (22) 532; (33) 722.

stable v. green manures, (40) 126.

storage experiments, (32) 818; (33) 423; (34) 517; (37) 628; (39) 216, 467, 519, 616.

straw, denitrifying action of, (26) 424.

substitutes for, (35) 323; (40) 724.

tanks and pits for conservation, (38) 86.

time and depth of application, (35) 425.

top-dressing v. plowing under for wheat, (36) 735.

treatise, (29) 820; (34) 716; (37) 215.

treatment for fly control, (40) 356.

use, (31) 421; (36) 119, 323, 817; (38) 497.

use against cotton rust, (32) 735.

in Dutch East Indies, (30) 697.

greenhouses, (33) 42.

Holland, (30) 720.

war time, (38) 723.

western North Dakota, (33) 225.

of carbon dioxide with, (32) 322.

on moor soils, (38) 132.

on peat soils, (37) 134, 135; (39) 437.

with sodium nitrate, (37) 124.

utilization of nitrogen from, (38) 212.

v. clover as source of humus, (40) 724.

v. fertilizers, (35) 815.

v. fertilizers for carnations, (32) 747.

valuation, (38) 894.

value and conservation, (33) 98, 325; (38) 698.

value and use, (28) 625.

value on Indiana soils, (40) 514.

winter v. spring application, (26) 32.

Manurial—

earths of Mysore, analyses, (28) 223.

value of dairy feeds, (40) 126.

value of grain and cake feeds, (39) 530.

Manuring—

autumn v. spring, (39) 621.

effect on soil moisture, (40) 430.

experiments, (39) 335, 737, 813.

experiments with irrigated crops, (40) 421.

new basis for, (29) 516.

science of in Germany, (32) 620.

treatise, (36) 114; (39) 724.

Maepa radiata, structure and systematic position, (30) 51.

Maple—

analyses and nutritive value, (35) 164.

as affected by tarring roads, (26) 432.

borer, notes, (28) 155.

broadleaf, notes, (27) 846.

buds as affected by ether, (26) 127.

destructive distillation, (27) 745; (38) 808.

discoloration in kiln, (34) 509.

disease, tumorous, (39) 353.

diseases in Michigan, (38) 545.

diseases, notes, (26) 57; (31) 343.

Maple—Continued.

- diseases, studies, (33) 544.
- distillation value, (32) 48.
- hard, oil injury to, (31) 641.
- hard, volume tables for, (30) 744.
- injury by squirrels followed by fungi, (38) 646.
- leaf cutter, notes, (28) 157.
- leaf scale, woolly, notes, (26) 856.
- leaf spot, biology, (28) 851.
- leaf stem-borer, notes, (26) 856.
- leaf stem saw-fly, notes, (28) 351.
- leafhopper, notes, (34) 752.
- leaves, bronzing, (28) 330.
- leaves, decomposition in soil, (40) 214.
- leaves, symbiosis with fungi, (37) 327.
- mites, new, notes, (30) 362.
- Nectria disease, notes, (38) 253.
- Norway, anthracnose of, (36) 47.
- Norway, measurements of hypocotyl, (28) 739.
- phenacoccus, notes, (29) 251.
- products—
 - adulteration, (40) 612.
 - analyses, (39) 15.
 - cost of production, (38) 414.
 - methods of analysis, (31) 610, 611; (32) 808; (33) 208.
 - standards and analyses, (40) 864.
- pseudococcus or false scale, notes, (28) 752.
- root diseases, notes, (30) 147.
- rot, notes, (26) 752.
- sap, bacterial flora of, (26) 825.
- sap, microorganisms of, (29) 113, 115, 157.
- scale—
 - cottony, in Wisconsin, (38) 155.
 - cottony, notes, (26) 655; (27) 53, 755; (28) 156, 351; (29) 251; (30) 655; (33) 352; (36) 755; (37) 358, 459.
 - cottony, remedies, (26) 654; (35) 358.
 - false cottony, notes, (26) 147.
 - false, notes, (27) 755; (33) 253; (34) 752.
- sirup—
 - adulteration, (33) 208.
 - adulteration, detection, (27) 207; (31) 610, 611; (34) 807.
 - analyses, (29) 115, 766.
 - and sugar, production, (29) 208; (39) 15, 418.
 - as affected by microorganisms, (29) 113.
 - judging, (35) 12.
 - methods of analysis, (35) 206.
 - methods of examination, (26) 661.
 - production, (28) 344.
 - remedying defects in, (29) 114.
 - variation of analytical values, (32) 808.
- sugar—
 - analyses, (29) 766; (34) 460.
 - composition, (38) 8.
 - density and porosity, (32) 47.
 - industry in Canada, (30) 711; (33) 208.
 - making schools in Quebec, (32) 698.
 - manufacture, (29) 208; (33) 208.
 - methods of analysis, (27) 499; (35) 416; (38) 8.
 - notes, (39) 16, 418.
 - production, (28) 344.
 - sand, analyses, (33) 15.
 - sand, composition, (33) 208.
 - sycamore, witches' broom affecting, (29) 51.
 - tissues, transformation of malic acid by, (27) 309.
 - twig pruner, see *Elaphidion villosum*.
 - wilt, studies, (39) 858.
 - wood creosote, composition and toxicity, (37) 502.
 - woods of United States, (30) 46.
- Maples—
 - destruction by Chinese cotton scale, (26) 556.
 - insects affecting, (40) 554, 855.
 - Norway, Nectria parasitic on, (33) 249.
 - silver, analyses of seed, (39) 366.
 - starch reserve in, (33) 523.
 - sterility, (37) 240.
 - sugar, as affected by miscible oils, (33) 252.
 - thrombotic disease of, (33) 249.
- Marabuntas of Georgetown Museum, (32) 758.
- Marambunga, composition, (28) 873.
- Maranko, notes, (29) 461.
- Maraperus sp., oviposition and feeding in, (26) 457.
- Maraschino cordials, notes, (32) 297.
- Maraschino, labeling, (26) 762.
- Marasimia trapezalis, notes, (28) 158.
- Marasmius—
 - coronatus n.sp., description, (35) 244.

Marasmius—Continued.

- oreades, hydrocyanic acid in, (26) 228.
- oreades, studies, (26) 446.
- pernicius n.sp., description, (34) 347.
- plicatus, notes, (35) 653.
- sacchari, notes, (26) 143, 445, 553; (27) 749; (28) 649; (29) 647; (30) 541; (31) 746; (32) 643; (34) 442, 539, 841; (36) 541, 846; (37) 452, 753, 838; (40) 47, 155, 848.
- sacchari, studies, (33) 852; (38) 851.
- sarmentosus, notes, (37) 452.
- sp., studies, (27) 50.
- spp., effect on vegetation, (38) 222.
- spp., notes, (29) 152; (35) 244.
- spp. on cacao, (37) 349.
- spp. on sugar cane, (32) 442; (38) 550; (40) 157, 844.
- Marattiaceae, mycorrhiza of, (37) 630.
- Marc—
 - conversion into fertilizer, (26) 819.
 - feeding value, (32) 567.
 - fertilizing value, (29) 129.
- March flies, of Australia and Tasmania, (26) 456.
- March fly, notes, (36) 552.
- Marchantia, chondriosomes, (39) 332.
- Marcottage, notes, (27) 537.
- Mares—
 - and foals, care, (37) 473.
 - apparatus for collecting urine and feces, (28) 269.
 - artificial insemination, (33) 571; (37) 473; (38) 169.
 - capsule breeding, (35) 377.
 - care and management, (29) 873.
 - gestation period in, (28) 466, 469.
 - milk, composition, (40) 775.
 - pregnant, efficiency for farm work, (33) 266.
 - racing performances and breeding value, (29) 773.
 - short gestation in, (38) 576.
- Margarin—see also *Oleomargarine*.
- accessory growth substance in, (38) 265.
- adulterated, detection, (28) 208.
- analysis, miscibility curves in, (26) 508.
- as affected by preservatives, (26) 778.
- decomposition by microorganisms, (28) 372.
- detection in butter, (26) 212, 410; (34) 13.
- detection of benzoic acid in, (28) 208.
- examination, (27) 412.
- manufacture, (30) 378; (38) 508; (39) 411.
- methods of analysis, (33) 258.
- nutritive value, (37) 165.
- preservatives, detection, (31) 508.
- vegetable, rancidity, (40) 714.
- Margaronia n.g. and n.sp., description, (38) 857.
- Margaropus—
 - annulatus, see *Cattle tick*.
 - annulatus australis, notes, (28) 158; (30) 555.
 - microplus in Argentina, (40) 459.
 - microplus, oviposition of, (25) 760.
 - spp., notes, (27) 865.
- Marginal points of blood of mammals, (33) 478.
- Marguerite fly, studies, (32) 451.
- Mariaella dussumieri, notes, (26) 353.
- Marigold, cut, preservation, (31) 837.
- Marigold, water requirement, (32) 127.
- Marine—
 - algae, imbibitional swelling, (39) 731.
 - algae, osmotic pressure in, (39) 223.
 - animals as a source of oil and manure, (32) 219.
 - fiber, description and use, (38) 529.
 - manures, analyses, (28) 722.
 - mud, analyses and fertilizing value, (37) 814.
- Marjoram adulterant, detection, (39) 669.
- Market—
 - bureaus, State and Federal, (37) 888.
 - cereal, of Rotterdam, (39) 797.
 - commission of California, (39) 90.
 - conditions in Berlin, (27) 363.
 - conditions in Boston, (27) 463.
 - conditions in Hawaii, (35) 190.
 - conditions in New York City, (32) 89.
 - garden crops, organic matter for, (40) 134.
 - garden experimental and research station in Hertfordshire, (34) 199.
 - gardeners' associations in Netherlands, (31) 691.
 - gardening—see also *Gardening and Truck gardening*.
 - handbook, (39) 843.
 - in Ohio and Kanawha River valleys, (31) 44.

Market—Continued.

- gardening—continued.
 - in vicinity of Dresden, (32) 232.
 - treatise, (36) 639; (40) 536.
 - gardens of South Australia, (40) 340.
 - milk business of Detroit, (39) 182.
 - municipal, in Newton, Massachusetts, (36) 289.
 - prices, retail, digest of data, (32) 763.
 - problems of Alaska, (39) 191.
 - survey of Atlanta, Georgia, (37) 91.
 - system in Chicago, (39) 797.
 - train service, (37) 594.
- Marketing—
- agricultural products, (39) 296, 895; (40) 293, 294, 791, 792.
 - and distribution, courses in, (34) 307.
 - and farm credits, book, (37) 391.
 - assembling methods in, (33) 192.
 - associations—
 - cooperative, (33) 91.
 - cooperative, in Ontario, (33) 893.
 - financing, (33) 294.
 - in Posen and West Prussia, (34) 893.
 - in Wisconsin, (28) 895.
 - auction, (40) 489.
 - bureau of, in Maine, (33) 92.
 - butter and cheese by parcel post, (39) 182.
 - by freight car peddler, (39) 90.
 - by parcel post, (39) 182, 543.
 - car-lot distributions in, (34) 893; (40) 489.
 - centers, rest rooms in, (39) 496.
 - collegiate courses on, (40) 294.
 - community cooperation in, (30) 792.
 - conditions in Salt River Valley, (39) 593.
 - cooperative, (33) 294; (37) 391, 796, 888; (39) 496; (40) 488, 489.
 - cooperative, in France, (40) 688.
 - cooperative, papers on, (29) 595.
 - cooperative, treatise, (38) 595.
 - county, in England and Wales, (40) 390.
 - experiments, (31) 388.
 - for the household, (39) 195.
 - government, of Australian wheat, (40) 592.
 - improvement, (40) 489.
 - in Canada, (38) 294.
 - Hawaii, (37) 391.
 - Idaho, (40) 689.
 - Louisiana, (40) 92.
 - New Jersey, (40) 592.
 - Washington, (40) 689.
- instruction in, (31) 192.
- law in Texas, (33) 492.
 - laws in New York, (40) 390.
 - livestock, (40) 488.
 - methods in Monmouth Co., (39) 746.
 - organization, cooperative, (32) 792.
 - organizations in California, (38) 191.
 - pamphlet, (34) 595.
 - perishable products, (40) 488, 489.
 - practices of Wisconsin and Minnesota creameries, (39) 580.
 - problems, terminal, (35) 393.
 - producers' organizations for, (39) 796.
 - relation of Government to, (35) 89; (40) 293.
 - relation to cost of living, (29) 867.
 - report on, (35) 296.
 - State departments of, (35) 497.
 - teamwork in between farmer and agent, (39) 496.
- Markets—
- American, symposium on, (30) 294.
 - and rural economics, treatise, (31) 894.
 - bibliography, (36) 762.
 - city, in Minneapolis, (33) 492.
 - commissioner of British Columbia, report, (31) 690.
 - community, (39) 894.
 - European municipal, conditions and management, (28) 763.
 - in Boston, (36) 593, 762.
 - Cleveland, (30) 295.
 - Idaho, (38) 293, 294.
 - New Haven, Connecticut, (38) 595.
 - New York, (38) 293.
 - New York City, (28) 461; (30) 894.
 - inspection, (36) 663.
 - inspection in Virginia, (29) 766.
 - mechanism of, (28) 388.

Markets—Continued.

- municipal, in Wisconsin, (35) 593.
 - municipal terminal, (40) 293.
 - public, in Newton, Massachusetts, (35) 860.
 - public, in United States, (38) 293.
 - public, sanitary control, (36) 562.
 - retail public, (33) 294.
- Marl—
- analyses, (26) 127, 715; (27) 327; (29) 119; (32) 424; (33) 723; (35) 430; (36) 27, 821; (38) 626.
 - calcareous, use in agriculture, (40) 816.
 - clay, decomposition, (35) 119.
 - deposits in South Carolina, (34) 725.
 - deposits in Virginia coastal plain, (29) 513.
 - effect on loamy sand, (29) 19.
 - fertilizing value, (26) 725; (27) 128; (36) 122; (40) 321.
 - greensand, analyses and fertilizing value, (35) 817.
 - greensand, analyses and use, (29) 513.
 - importance of fine grinding, (26) 324.
 - phosphatic, analyses, (35) 425.
 - pumping experiments, (39) 393.
- Marlettiella aleyrodesii n.sp., description, (28) 162.
- Marling, effect on clay soils, (30) 23.
- Marmalade adulteration, detection, (27) 806.
- Marmalades—
- analyses, (28) 762.
 - examination, (27) 268.
 - judging, (29) 865.
 - methods of analysis, (27) 613.
 - methods of examination, (39) 611, 612.
 - preparation, (32) 253; (35) 419.
 - preparation from citrus fruits, (35) 113.
- Marmara—
- elotella, life history, (38) 60.
 - n.spp., descriptions, (33) 748.
 - opuntiella, notes, (28) 451.
- Marmosa mexicana savannarum n.subsp., description, (37) 757.
- Marmota flaviventer, relation to spotted fever, (31) 160.
- Marmots—
- American, revision, (33) 57.
 - ectoparasites of, (37) 879.
 - relation to plague, (37) 180.
 - susceptibility to pneumonic plague, (28) 180.
- Marrow cabbage—
- as forage crop, (39) 338.
 - cooperative experiments, (29) 138.
 - culture, (27) 340.
 - culture experiments, (28) 531.
 - culture for forage, (33) 34.
 - culture for winter forage, (38) 735.
 - culture in New Zealand, (27) 236.
 - fertilizer experiments, (29) 632.
 - notes, (28) 796.
 - v. thousand-headed kale, (32) 827.
 - varieties, (33) 33.
- Marrow mildew, notes, (37) 453.
- Marrows, vegetable, notes, (29) 338.
- Mars, atmosphere of, (32) 210.
- Marsh—
- and swamp soils, notes, (27) 618.
 - cat-tail, ecology of, (32) 151.
 - crops, culture and selection experiments, (29) 531.
 - mud, analyses, (32) 424.
 - near Madison, Wis., flora of, (32) 329.
 - of the southern Vendée, (30) 213.
 - plants, fertilizing value, (38) 520.
- soils—
- characteristic weeds of, (26) 538.
 - improvement, (32) 31; (40) 587.
 - management, (26) 95; (33) 325.
 - of eastern United States, (27) 618.
 - of German North Sea coast, (30) 622.
- Marshes—
- sea, origin, (27) 513.
 - vegetation as indicator of quality, (40) 718.
- Marshmallows, analyses, (32) 560.
- Marsonia—
- carthami n.sp., description, (38) 648.
 - potentillae, pathological forms, (26) 545.
 - rosae, notes, (32) 752; (36) 851.

- Marssonina—
kirchneri—
n.sp., description, (27) 354.
n.sp., notes, (28) 861.
panattoniana (Marssonina perforans)—
notes, (27) 45.
studies, (39) 355.
- Marsupials, chromatin bodies in erythrocytes of, (29) 478.
- Martin roost, remarkable, (39) 154.
- Martin slag, basic, fertilizing value, (34) 725.
- Martynia louisiana seeds, composition, (34) 311.
- Marx, Karl, theories of, (29) 491.
- Maryland—
College, notes, (26) 494, 796; (27) 697; (28) 697; (30) 95; (31) 99, 300, 496, 600, 695; (32) 497, 694; (33) 99, 197, 600, 794; (35) 500; (36) 98, 295; (37) 97; (38) 399, 699; (39) 96, 599; (40) 98, 199.
Station, financial statement, (27) 97.
Station, notes, (26) 796; (28) 697; (31) 300, 600, 695; (33) 197, 600; (34) 695; (35) 500, 697; (36) 295; (38) 399; (39) 96, 399, 599; (40) 98, 199.
Station, report, (30) 696; (33) 299; (34) 95; (37) 599; (38) 697; (40) 494.
Station, report of director, (27) 97.
- Mascarenhasia elastica, latex of, (31) 128.
- Mash meal, analyses, (38) 572.
- Mashyem kalai, description and culture, (40) 231.
- Masiceratidae, new, in South America, (34) 65.
- Maslin, production in Spain, (28) 736.
- Mason bees, treatise, (32) 758.
- Masonry, preventing dampness in, (28) 786.
- Massachusetts—
College—
agricultural education in, (38) 301.
bibliography of, (40) 595.
dedication of Stockbridge Hall, (34) 597.
function of, (28) 596.
history, (39) 897.
notes, (26) 96, 600, 694; (27) 197, 493, 697; (28) 93, 300, 396, 494, 600, 697; (29) 195, 300, 397; (30) 95, 396, 698, 797; (31) 197, 398, 496, 600, 695, 796; (32) 198, 396, 599; (33) 300, 699; (34) 96, 198, 295, 496, 600, 695; (35) 96, 397; (36) 98, 295, 695, 796; (37) 97, 497; (38) 97, 498, 797; (39) 696; (40) 98, 199, 497.
special commission's report on, (39) 298.
work of agricultural education department, (29) 296.
- Federation of Rural Progress, (30) 198.
- Station—
financial statement, (26) 95; (28) 395.
guide to plats, (38) 796.
notes, (26) 96, 396, 600; (27) 197, 397, 493, 697, 900; (28) 93, 697; (30) 396; (32) 198, 396; (33) 300, 699; (34) 198, 295; (35) 397; (36) 98, 295, 695; (37) 97; (38) 600; (39) 599; (40) 98, 199, 497, 900.
report, (30) 197; (32) 291; (34) 294; (36) 195; (38) 298.
report of director, (26) 95; (28) 395.
work of, (38) 304.
- Massaria n.spp. from Japan, (39) 753.
- Massecuttes—
frothy fermentation, (40) 615.
tables for purity, (40) 116.
treatment, (40) 510.
- Massospora cicadina, notes, (28) 157.
- Mast, softening effect on pork fat, (37) 680.
- Mastication, relation to peridental membrane, (26) 360.
- Mastigospirium album, notes, (37) 247.
- Mastitis, see Mammitis.
- Maté, see Yerba maté.
- Materials of construction, treatise, (29) 890.
- Maternal placenta, experimental production, (27) 174.
- Mathematics—
for agricultural students, (40) 796.
vocational, textbook, (37) 598.
- Matière noire, phosphorus content, studies, (26) 814.
- Matkee as a green manuring plant, (38) 234.
- Mato de la playa, culture, (34) 736.
- Matraca, culture, (34) 736.
- Matricaria—
chamomilla, hydrocarbons in, (26) 107.
inodora, dissemination by farm animals, (26) 839.
- Matthiola—
annua, bacteriosis of, (28) 449.
annua, mutation in, (37) 28.
doubles in, (35) 730, 731.
incana annua as a host of eelworm, (34) 349.
inheritance of doubleness in, (34) 237; (36) 826.
inheritance of hoariness in, (35) 731.
mutant forms of, (28) 439.
- Maturation, early phases of, (26) 470.
- Mauritius—
beans as green manure, (37) 320.
binder twine from, (27) 534.
- Mauromyia pulla, notes, (34) 554.
- May beetle—see also Phyllophaga and June beetle.
bird enemies, (34) 849; (40) 547.
destruction by hogs, (37) 261.
in Austria-Hungary, (33) 657.
larvae in greenhouse soils, (34) 161.
life history, (38) 767.
notes, (28) 752, 757; (30) 555; (33) 351; (34) 158.
notes and remedies, (29) 561.
parasites, introduction into Porto Rico, (31) 458.
- May beetles—
new, of Porto Rico, (38) 161.
of Illinois, (35) 158.
revision, (35) 467.
- Maya farms, size of, (40) 688.
- Maya, notes, (29) 59.
- Mayetiella destructor, see Hessian fly.
- Mayuen grass, notes, (26) 361.
- Mbori in camels, notes, (26) 85.
- Meadow—
culture tests in Jutland, (40) 136.
fescue, see Fescue.
foxtail—
midge, notes, (37) 463.
on bog and moss soils, (40) 212.
pollination experiments, (37) 735.
yield and composition, (28) 834; (30) 139.
grasses, water requirements, (33) 228.
- hay—
analyses, (26) 369, 767; (30) 868.
as affected by long storage, (32) 363.
composition as affected by fertilizers, (31) 524, 622.
digestibility, (30) 568.
lime and phosphorus content, (26) 873.
production in United Kingdom, (26) 793.
land, index to phosphorus and potash requirements, (40) 22.
- lark—
feeding habits, (28) 155; (29) 452.
notes, (29) 696.
western, economic value, (29) 52; (30) 654.
- oat grass, tall, culture experiments, (28) 532.
plant bug, studies, (40) 260.
- Meadows—see also Grassland and Pastures.
and pastures, treatise, (26) 830.
culture experiments, (28) 633; (29) 331.
culture in Siegerland, (29) 589.
culture on peat bogs, (37) 826.
culture, treatise, (32) 38.
establishment, (33) 332.
fertilizer experiments, (26) 39, 230, 329, 424, 629; (27) 529, 638, 725, 832, 833, 835; (28) 633; (29) 530, 632; (30) 134, 229, 526; (31) 821, 829; (33) 330, 527; (34) 620; (36) 529; (38) 432; (40) 136.
importance of, in dairying, (32) 870.
in Wyoming, (39) 135.
insects affecting, (37) 847.
irrigation experiments, (29) 427; (35) 637; (37) 84.
lining experiments, (29) 331; (37) 733.
moorland, botanical composition, (37) 135.
moorland, treatise, (31) 830.
native permanent v. seeded, (30) 526.
nitrogen assimilation in, (26) 422.
of Boulder Park region, Colorado, (37) 435.
of eastern United States, (27) 618.
phosphatic slag and kainit for, (28) 425.
preparation and care, (30) 230.
seeding, (31) 830; (35) 639.
seeding and reseeded, (29) 736.
seeding experiments, (40) 231.
swampy, water table, (40) 211.
wild hay, flora of, (32) 329.
- Meal—
analyses, (27) 670; (31) 65.
crude fiber in, determination, (40) 206.
hours, effect on energy elimination in man, (27) 869.

Meal—Continued.
 moth caterpillar, "schlafsucht" of, (27) 57.
 moth, notes, (26) 453.
 worm, life history, (34) 65.
 Meals, *see also* Diet.
 for working people in London, (31) 68.
 low-priced, in Christiana and Vienna, (32) 856.
 low-priced, in Copenhagen, (32) 857.
 nutritive value, (31) 68.
 planning, (31) 359; (32) 558, 597; (35) 269, 765;
 (36) 762; (38) 662.
 planning and serving, (29) 898.
 Mealworms, remedies, (27) 258.
 Mealy bugs—*see also* Citrus mealy bug, Grape
 mealy bug, *etc.*
 in citrus groves, (39) 155.
 in Hawaii, (34) 59.
 in Ohio, (34) 59.
 notes, (27) 155.
 of California, (30) 854; (40) 262.
 Ontario, in California, (34) 62.
 parasite of, introduction into Florida, (39) 461.
 parasites of, (30) 753; (37) 563, 847; (40) 359.
 parasites of in the Far East, (31) 60.
 rearing, (36) 253.
 studies, (37) 563.
 Measles in—
 cattle, (29) 782.
 domestic animals, paper on, (32) 271.
 livestock, (34) 185.
 sheep, (29) 887.
 Measures—
 and weights, inspection, (29) 266.
 and weights laws in Iowa, (26) 261.
 conversion into metric system, (30) 697.
 Meat—*see also* Beef, Pork, *etc.*
 and blood meal for horses, (34) 869.
 and bone meal, analyses, (32) 169.
 and bone scrap, analyses, (28) 364; (29) 570; (31)
 467; (33) 371.
 and flour, substitutes for (33) 361.
 and food inspectors' examinations in England,
 (33) 261.
 and meat products—
 curing on the farm, (33) 17.
 distribution, (38) 294.
 law in Kentucky, (38) 567.
 methods of analysis, (33) 258.
 production and marketing in United States,
 (38) 595.
 as affected by polarized light, (31) 759.
 as protection against pellagra, (33) 565.
 bacteriological examination, (26) 480, 660.
 bacteriological methods of analysis, (31) 854.
 blanching for canning, (33) 66.
 boiled, red color of, (30) 257.
 canned, changes in, (32) 760.
 canned, inspection, (27) 565.
 canning, (27) 508; (38) 208, 507, 715; (39) 317, 614.
 canning and cooking tests, (26) 762.
 canning in the home, (35) 558.
 canning industry in United States, (32) 210.
 changes in during cold storage, (27) 460; (31) 659.
 changes in during vacuum drying, (29) 58.
 chopped, detection of added water in, (29) 460.
 chopped, examination, (31) 557.
 cleavage products, effect on dogs, (28) 568.
 cold storage and preservation, (27) 461.
 cooked, digestion of, (33) 565.
 cooking, (40) 656, 865.
 corned, studies, (27) 867.
 cost of production in Argentina, (29) 870.
 curing, (36) 114, 498.
 curing and smoking, (35) 317.
 curing on the farm, (28) 465; (31) 509.
 detection of kind in bologna, (28) 204.
 determination of freshness, (31) 64.
 determination of saltpeter in, (27) 504.
 digestion, protein metabolism during, (39) 772.
 diseased, feeding experiments with, (30) 260.
 diseased, in relation to sale warranty, (36) 662.
 dishes from waste, recipes, (40) 658.
 distribution in United States, (35) 393.
 drying and powdering, loss of fat from, (30) 205.
 effect on intestinal flora, (36) 665.
 emaciated, as human food, (30) 61.
 European markets for, (26) 874.
 examination, animal experimentation in, (32)
 856.
 export trade of Australia, (34) 767.

Meat—Continued.
 extract, Liebig's, protein body in, (27) 363.
 extract, vegetable, analyses, (27) 767.
 extracts—
 analyses, (30) 861; (31) 160, 161, 656.
 carnosin in, (30) 61.
 changes in nitrogenous constituents of, (31)
 160.
 cryoscopic studies, (27) 461.
 effect on gastric secretion, (26) 466; (31) 662.
 effect on vegetable foods, (27) 365; (28) 462.
 methods of analysis, (27) 498; (33) 804.
 nitrogenous constituents of, (26) 356.
 notes, (30) 163.
 feeding, effect on excretion of creatinin, (36) 264.
 feeds, analyses, (38) 369.
 fertilizing value, (29) 129.
 flies infecting, (39) 564.
 flour, preparation and properties, (34) 163.
 food products, manufacture, (38) 265.
 food value, (31) 860.
 food value and preparation, (33) 364.
 from slaughterhouses, bacteria in, (32) 358.
 from tuberculous animals, sterilization, (29) 460.
 frozen—
 and cold storage, changes in, (26) 355.
 black spots in, (30) 761.
 history, (27) 571.
 imports into Great Britain, (28) 769.
 industry in Argentina, (30) 171.
 industry in Australia and New Zealand,
 (31) 564.
 industry of New Zealand, (30) 711.
 nutritive value, (33) 162.
 studies, (29) 659.
 trade in 1913, (31) 258.
 trade of Australia, (29) 770.
 use in Netherlands, (27) 461.
 v. refrigerated, comparison, (27) 461.
 great central markets, (40) 488.
 ground, determination of added water, (37) 414.
 growth of Gärtner type bacilli on, (32) 559.
 high prices of in France, (28) 365.
 home canning and curing, (38) 715.
 horse, *see* Horse meat.
 hygiene, data on, (40) 183.
 hygiene, textbook, (35) 678, 879.
 imported, onchocerciasis in, (27) 83.
 imports into Great Britain, (26) 768; (30) 171.
 in the diet, (32) 354.
 industry in—
 Argentina, (27) 469, 672.
 South America, (31) 367.
 Switzerland, (26) 573.
 United States, (35) 666.
 infection by pathogenic bacteria, (35) 264.
 ingestion, effect on—
 amino acid content of blood and muscle,
 (33) 755.
 children, (29) 365.
 residual nitrogen in blood, (29) 767.
 ingestion, heavy, effect on dogs, (27) 167; (28)
 866.
 inspection, (29) 566.
 inspection—
 act, (31) 396.
 address on, (26) 83.
 guide, (28) 482.
 handbook, (37) 77.
 in British East Africa, (32) 373.
 Brunswick, (30) 78.
 Canada, (26) 157.
 foreign countries, (30) 477.
 Germany, (28) 583; (31) 760; (32) 578.
 Glasgow, (28) 178, 375.
 Norway, (39) 787.
 Oregon, (32) 778.
 Pennsylvania, (27) 475.
 Prussia, (27) 181.
 United States, (34) 185; (35) 178, 379;
 (36) 477; (37) 577.
 western Europe, (30) 276.
 municipal, (38) 179.
 regulations, (32) 777.
 state and municipal, (27) 167.
 treatise, (32) 777, 778; (40) 577.
 keeping, (28) 694.
 law in Canada, (26) 157, 881.
 light and dark, effect on urine, (28) 261; (29)
 663.

Meat--Continued.

- loss of fat in drying (28) 164.
- market, Smithfield, in London, (27) 171;
- marketing, (34) 306.
- marketing in—
 - Germany, (35) 497.
 - Queensland, (32) 793.
 - United States, (36) 164.
- markets, inspection in—
 - Indiana, (34) 861.
 - Montana, (33) 67.
 - North Dakota, (28) 762; (31) 657; (32) 162.
 - Pennsylvania, (27) 475.
 - Porto Rico, (26) 261.

meal—

- acidity, (35) 770.
- analyses, (26) 266, 267, 362, 363, 468, 568, 770; (27) 570, 774, 872; (28) 364, 464; (29) 666, 769; (30) 67, 565; (31) 73, 663; (32) 169, 667; (33) 371; (34) 169, 263, 371, 467, 566, 665; (35) 562; (36) 268, 765; (37) 471; (38) 67, 369; (39) 270; (40) 72.
- analyses and digestibility, (26) 567.
- and scrap, analyses, (39) 70, 370.
- detection in fish meal, (34) 467.
- effect on composition of bone, (33) 171.
- effect on fetal development, (33) 266.
- fertilizing value, (28) 723.
- for horses, (34) 769.
- for pigs, (33) 571.
- for poultry, (26) 669.
- methods of analysis, (29) 311.
- v. dried yeast for pigs, (26) 668.
- methods of analysis, (27) 498; (31) 258, 854; (32) 109.
- mycology of, (26) 355.
- oven temperature for, (33) 565.
- packing and curing, (27) 571.
- packing establishments, interstate, sanitary conditions in, (32) 457.
- packing industry in United States, (31) 64; (38) 294.
- physical-chemical method of examination, (28) 806.
- pickling and curing, (28) 65.
- pickling experiments, (28) 564.
- poisoning—
 - causes, (32) 84.
 - control, (29) 564.
 - diagnosis, (31) 878; (32) 375, 856.
 - notes, (26) 66; (28) 164, 677.
 - organisms, studies, (32) 760.
 - outbreaks, relation to rats and mice, (30) 355.
 - papers on, (34) 575.
 - precipitation in, (30) 479.
 - relation to puerperal diseases of cattle, (34) 386.
- post-mortem alterations, (26) 66.
- powder, nutritive value, (40) 463, 464.
- powder proteins, utilization, (26) 663.
- preparation, (28) 860.
- preparations, analyses, (30) 58.
- preservation, (33) 362; (37) 715; (38) 114.
- preservation—
 - on the farm, (36) 717.
 - Tellier method, (30) 257.
 - with nascent ozone, (29) 566.
- preservative containing benzoic acid, (29) 266.
- preserved, analyses, (33) 259.
- preserved, discussion, (28) 659; (35) 859.
- prices in—
 - Barcelona, (29) 162.
 - Bern, (32) 162.
 - England, (35) 90.
 - France, (33) 694.
 - Germany, (33) 165.
 - Munich, (32) 91.
 - Paris, (28) 662.
 - Paris, treatise, (30) 256.
 - Russia, (37) 292.
- production—
 - and consumption in United States, (31) 74.
 - and price in Germany, (28) 572.
 - in Argentina, (32) 12; (33) 268.
 - Australia and New Zealand, (33) 268.
 - Central America, (30) 100.
 - Netherlands, (28) 669.
 - the South, (32) 13.
 - United States, (32) 12; (34) 397; (40) 792.
 - on high-priced lands, (32) 12; (34) 398.

Meat--Continued.

products—

- detection of blackleg infections in, (29) 882.
- estimating water content, (40) 807.
- handbook, (30) 711.
- in United States, (38) 865.
- inspection, (29) 566.
- methods of analysis, (32) 109.
- preservation, (29) 312; (36) 463.
- typhoid infections by, (26) 480.
- water content, (32) 252; (34) 365; (35) 366.
- protein, cooked, digestibility, (32) 256.
- proteins, separation, (27) 498.
- purchasing and use, (38) 867.
- purchasing and use, treatise, (32) 354.
- putrefaction, (30) 861; (34) 163.
- raw chopped, bacteriological investigations, (26) 480.
- refrigerated in Europe, (33) 752.
- ripening and decomposition of, (31) 64, 258.
- ripening of, (33) 460.
- roasting, (30) 395.
- rôle in glycogen formation, (31) 763.
- salted, coloring matter in, (32) 454.
- samples for bacteriological examination, (36) 574.
- scrap—
 - analyses, (26) 665; (28) 265; (29) 367, 769; (30) 67, 565, 868; (31) 73, 168, 366, 569, 663; (32) 169, 259; (33) 371, 568, 665, 870; (34) 169, 263, 371, 467, 767; (35) 374, 562, 867; (36) 167, 268, 667, 765; (37) 268, 471, 767; (38) 67, 368, 572; (39) 70, 270, 370, 773, 780; (40) 72, 470, 571, 665.
 - cooked, analyses, (26) 165.
 - for laying hens, (35) 274; (39) 176, 275, 577; (40) 76, 670, 773.
 - for laying pullets, (34) 177.
 - for poultry, (31) 569.
 - selection, (36) 762.
 - shrinkage in cooking, (40) 656.
 - spoiled, chemical studies, (40) 712, 713.
 - statistics, (31) 165.
 - statistics in United Kingdom, (38) 494.
 - substitutes, purchasing and use, (38) 867.
- supply—
 - and distribution in New South Wales, (29) 862.
 - bibliography, (36) 762.
 - of France, (40) 488.
 - Germany, (30) 256, 567.
 - Great Britain, (27) 470.
 - United States, (29) 770, 896; (30) 100; (31) 564; (32) 98.
 - United States, commission on, (30) 96.
 - western Norway, (30) 268.
 - supplementing with fish, (31) 356.
 - tough, cooking, (33) 364.
 - trade of Argentina, (26) 573.
 - trade of Australia, (29) 666.
 - trichinae in, (39) 685.
 - trichinous, refrigeration of, (30) 881.
 - tuberculous, inspection, (34) 575.
 - tuberculous, utilization, (30) 558.
 - unsound, sterilization, (38) 265.
 - use in French army, (28) 659.
 - use in the dietary, (29) 862.
 - use in the Tropics, (30) 260.
- Mechanic arts schools—
 - notes, (31) 692.
 - of New York, (26) 192; (37) 394.
- Mechanical—
 - colleges, *see* Agricultural colleges.
 - engineer's reference book, (31) 287.
 - tissue, formation in plant tendrils, (27) 631.
- Mechanics, household, treatise, (36) 891.
- Meconopsis, inheritance of doubleness, (39) 123.
- Mecoptera of Japan, (30) 754.
- Mecroplitis melianae, notes, (28) 160.
- Media, *see* Culture media.
- Medic—
 - black, crossing with alfalfa, (31) 831.
 - black, nodule bacteria of, (32) 33.
 - fertilizer experiments, (27) 24.
- Medicago—
 - arborea, culture, (30) 228, 335, 632.
 - ash constituents of, (30) 334.
 - falcata—
 - analyses, (31) 863.
 - germination, (29) 331.
 - studies, (36) 334.
 - tests, (33) 632.

- Medicago**—Continued.
hardiness, (35) 229.
improvement, (37) 136.
obicularis, culture, (32) 226.
sativa, analyses, (27) 469.
sativa, comparative morphology, (31) 624.
spp., glandular pubescence, (40) 137.
spp., yield of seed, (28) 636.
- Medical**—
commissions, relation to pure milk, (29) 878.
cooperation, rural experiment in, (31) 294.
directory of Saxony, (28) 375.
periodicals, list, (30) 286.
progress, review of investigations, (33) 876.
- Medicinal**—*see also* Drug plants.
herbs, description, (26) 327; (40) 247.
plants, culture experiments, (31) 536.
plants, production in United States, (39) 449, 545.
- Medicine**—
physiology and biochemistry in, (40) 577.
relation to entomology, (33) 152.
use of "normal" curve of frequency in, (29) 168.
- Medicines**—
inspection in Missouri, (26) 564.
of ancient Egyptians, (30) 559.
patent or proprietary, (31) 658; (40) 182.
subcutaneous administration, (32) 272.
- Mediterranean coast fever**, studies, (34) 383.
- Mediterranean flour moth**—
destruction by heat, (29) 856.
flacherie of, (35) 253.
in mills and warehouses, (34) 463.
in soldiers' biscuits, (34) 251.
notes, (29) 655.
parasites of, (27) 564; (39) 566.
remedies, (27) 258; (40) 547.
- Medlar**—
floral parts and genesis, (39) 527.
insects affecting, (26) 147.
leaves, free hydrocyanic acid in, (27) 635.
Monilia affecting, (28) 241.
- Megachile** pollinating alfalfa, (39) 661; (40) 264, 760.
- Megacolum stramineum**, life history, (38) 359.
- Megalonectria pseudotrichia**, notes, (34) 540.
- Megalopodinae**, catalogue, (30) 458.
- Megalopyge krugii**, notes, (33) 554.
- Megarhoga theretrae** n.s.p., description, (29) 562.
- Megarhyssa**, studies, (34) 758.
- Megascelinae**, catalogue, (30) 458.
- Megastigmus**—
aculeatus in New Jersey, (37) 856.
aculeatus, notes, (26) 861.
amelanchieris n.s.p., description, (40) 656.
laricis n.s.p., description, (32) 557.
piceae n.s.p., description, (33) 658.
revision, (29) 458.
sp., notes, (31) 849.
spermatophorus, oviposition in seed of Douglas fir, (35) 161.
- Megilla**—
fusculabris, negative geotropism of, (30) 357.
maculata—
introduction, (32) 846.
life history and habits, (34) 555.
notes, (29) 853; (32) 654.
studies, (39) 663.
- Megoura solani**, notes, (28) 654.
- Megoura viciae**, notes, (28) 556.
- Meigenia floralis**—
biology, (39) 658.
parasitic on black alfalfa-leaf beetle, (38) 863.
- Meiostagmin reaction**—
diagnostic value, (26) 181, 579.
studies, (31) 178.
with malignant tumors, (33) 280.
- Melalopha (Ichthyura) inclusa**, notes, (26) 856.
- Melamomphus** spp., notes, (35) 364.
- Melampsalta incepta**, notes, (29) 558.
- Melampsora**—
albertensis, notes, (26) 340.
alpina, notes, (33) 145.
betulina, notes, (26) 852.
bigelowii on Larix, (36) 651.
bigelowii, overwintering, (39) 553.
lini, biology, (34) 136.
lini, notes, (30) 649; (38) 848.
lini, overwintering, (33) 647.
medusae, infection experiments, (30) 745.
monticola n.s.p., description, (38) 252.
- Melampsora**—Continued.
n.spp., descriptions, (35) 251.
occidentalis n.s.p., description, (39) 254.
on Japanese willows, studies, (35) 251.
pinitorqua, life history, (30) 745.
spp., inoculation experiments, (38) 253.
spp., notes, (27) 252.
spp. on Euphorbia in North America, (38) 252.
spp., spore germination, (38) 225.
tremulae, notes, (28) 443.
- Melampsoraceae**, monograph, (36) 647.
- Melampsorella**—
elatina, notes, (29) 451.
ricini, notes, (33) 545; (38) 848.
ricini, studies, (30) 845.
- Melampsoridium betulae**, overwintering, (39) 553.
- Melampsoropsis pyrolae**, overwintering, (39) 553.
- Melanchra steropastis**—
notes, (38) 257.
parasites of, (39) 159.
- Melanconis**—
modonia (M. pernicioso), notes, (36) 752.
modonia on chestnut, (33) 56.
modonia, studies, (28) 240.
spp., notes, (40) 160.
- Melanconium**—
bambusae n.s.p., description, (36) 251.
fuligineum, studies, (32) 751.
n.s.p. on tomatoes, (36) 49.
on sugar cane, (40) 157, 844.
on tomato, (36) 749.
sacchari, notes, (29) 647; (30) 541; (32) 442; (34) 349; (35) 49; (36) 846; (37) 452; (38) 550, 851; (40) 155.
sacchari, studies, (36) 648.
- Melandrium**—
album, anther smut of, (26) 552.
album, root system, (37) 542.
inheritance of leaf coloration in, (32) 35.
- Melanin**—
misuse of term, (27) 671.
pigment, formation, (40) 665.
pigment, origin in feather germs of fowls, (38) 171.
studies, (27) 468; (30) 707, 708.
- Melanocheila riparia**, studies, (37) 764.
- Melanocheilus leucoptera** n.g. and n.s.p., description, (35) 243.
- Melanogaster variegatus broomianus**, notes, (34) 849.
- Melanomma** sp., fixation of nitrogen by, (27) 225.
- Melanophila fulvoguttata**, notes, (33) 252.
- Melanoplus**—*see also* Locusts.
atlantis, studies, (36) 153.
differentialis, notes, (35) 657.
differentialis, studies, (39) 359.
spp., egg-laying habits, (39) 656.
spp., injurious to alfalfa, (32) 553.
spp., notes, (28) 59.
spp., parasitic infections, (40) 164.
spp., remedies, (34) 158; (36) 55.
- Melanops**—
life histories, (36) 246.
queruam and Sphaeropsis malorum, identity, (31) 446.
- Melanopsammopsis heveae**, notes, (38) 356.
- Melanorrhoea usitata** and its oleoresin, (38) 247.
- Melanosis**—
generalized, in fowls, (27) 671.
relation to cancer, (27) 289.
- Melanospora**—
asparagi n.s.p., description, (36) 748.
parasitica, notes, (29) 46.
- Melanostoma mellinum**, notes, (36) 460.
- Melanotic pigment**, origin, (27) 468.
- Melanotus**—
communis, *see* Corn wireworm.
prothetely in, (35) 261.
spp., notes, (32) 556.
- Melanoxanthium**—
antennatum n.s.p., description, (29) 654.
saliceti, *see* Aphis saliceti.
- Melanoxanthus solliciti**, notes, (28) 254.
- Melasoma scripta**, *see* Cottonwood leaf beetle.
- Meleborus laspeyresiae** n.s.p., description, (38) 165.
- Melezitose** in Douglas fir manna, (39) 802.
- Melia azadirachta** cake, fertilizing value, (38) 220.
- Meliana abillinea**, notes, (28) 160.
- Meliatine**, occurrence in buck beans, (26) 24.
- Melibiose**, acetates of, (34) 408.

- Melibiose, preparation, (34) 408.
 Meliethes aeneus, notes, (27) 457; (40) 260.
 Melilot, white, as green manure, (40) 24.
 Melilotus—
 alba, annual variety, (39) 642.
 as green manure for citrus, (32) 233.
 fertilizer experiments, (30) 820.
 indica as green manure, (34) 36; (39) 31.
 parviflora, description, (36) 639.
 spp., geographical distribution, (26) 335.
 Melinis minutiflora—
 culture in Hawaii, (32) 729.
 culture in Porto Rico, (29) 631.
 for dairy cattle, (32) 471.
 notes, (26) 362.
 Mellola—
 arundinis, notes, (38) 550.
 camelliae, notes, (26) 555.
 heveae, n.sp., notes, (37) 253.
 in Porto Rico, (37) 149.
 palmarum, notes, (28) 241; (38) 758.
 Meliolas and associated fungi, (40) 249.
 Meliopotis januaris, notes, (40) 56.
 Melissoblaetes rufovenalis, notes, (35) 258.
 Melitara spp., notes, (28) 451.
 Melitensis, notes, (27) 681.
 Melittomma insulare—
 control in Seychelles, (33) 555.
 notes, (29) 853.
 Melittia satyriniformis, *see* Squash borer.
 Mellen's Food refuse, composition and digestibility, (32) 666.
 Mellissopus latiferreana, notes, (35) 56.
 Meloidae—
 notes, (30) 454.
 of Mexico, (30) 757.
 Melolontha—
 spp., remedies, (34) 454; (37) 467.
 vulgaris, digestive ferments of, (26) 657.
 Melolonthinae, catalogue, (30) 458.
 Melon—
 aphis—
 life history and remedies, (38) 764.
 notes, (27) 299; (28) 158; (33) 746.
 relation to cucumber mosaic disease, (36) 350.
 remedies, (32) 151.
 studies, (29) 355.
 canker, notes, (27) 353.
 disease, studies, (31) 52.
 diseases—
 in Sweden, (32) 641.
 notes, (37) 653.
 treatment, (28) 142; (39) 52.
 fly, danger of introduction, (39) 467.
 fly, life history, (32) 452.
 fly, parasites of, (37) 162, 847; (40) 459.
 fly, remedies, (31) 757.
 fly, studies, (33) 562; (37) 566; (39) 155.
 fungus disease, notes, (26) 244.
 industry in Valencia, (27) 39.
 pear, tests, (27) 741.
 Melons—
 analyses and use, (30) 363.
 breeding for disease resistance, (30) 331.
 cassaba, culture experiments, (33) 43.
 culture in southern France, (36) 138.
 culture under irrigation, (28) 839.
 insects affecting, (27) 53, 453; (31) 248; (37) 760; (38) 653.
 localization of acids and sugars in, (36) 110.
 Mendelism in, (32) 140.
 Monkotoon, as a cattle food, (29) 569.
 notes, (29) 338.
 oil and press cake from seeds, (40) 803.
 parthenogenesis in, (29) 837.
 sampling device for, (37) 711.
 stock, culture, (34) 630.
 stock, varieties, (30) 435.
 varieties at Wisley, (33) 536.
 Melophagus ovinus, *see* Sheep tick.
 Melospiza melodia, destruction of grain aphids by, (29) 453.
 Melusina (Simulium) dinellii, notes, (27) 560.
 Membracidae—
 bird enemies, (39) 860.
 of Cayuga Lake basin, (38) 462.
 of Kansas, (31) 59.
 of Philippines, (36) 755.
 parasitic castration in, (26) 148.
 Membranes, permeability, (38) 126.
 Memythruss—
 perlucida n.sp., description, (33) 748.
 polistiformis, *see* Grape root borer.
 spp., notes, (28) 155.
 Mendel monument, notes, (28) 531.
 Mendelian—
 characters in plants, animals, and man, (28) 531.
 characters, models to illustrate segregation and combination, (37) 432.
 class frequency, probable error, (37) 432.
 formulas, simplification, (29) 68.
 inheritance and probable error of class frequencies, (40) 524.
 inheritance, graphic representation, (38) 822.
 ratios, test of goodness of fit, (29) 67.
 segregation, exception to, (32) 521.
 Mendelism—
 algebra of, (28) 570, 571.
 discussion, (27) 769; (29) 67.
 manual, (38) 367.
 review of investigations, (34) 564.
 Mendel's law—
 notes, (26) 773.
 paper on, (28) 531.
 relation to animal breeding, (28) 666.
 Menesta albaclialla, life history, (34) 64.
 Menetypus variegatus n.sp., description, (32) 658.
 Menhaden—
 fish oil, detection, (28) 412.
 industry, notes, (29) 318.
 Meningitis organisms, agglutination test, (40) 83.
 Meningococcus, food requirements, (37) 178.
 Meningo-encephalitis, paper on, (32) 271.
 Meningo-encephalomyelitis in fowls, (36) 782.
 Menominee County Agricultural School, (32) 794.
 Menopon—
 pallidum, notes, (35) 878.
 spp., parasitic on fowls, (35) 183.
 Mental—
 and muscular work, notes, (28) 765.
 development as affected by nutrition, (31) 557.
 fatigue, effect on gastric secretion, (26) 160.
 fatigue, measurement, (28) 570.
 work, effect on metabolism, (29) 768.
 work, metabolism in, (31) 363.
 Mentha piperita, essential oil of, (26) 504.
 Menthol, effect on hyacinths and tulips, (26) 731.
 Menthone, inversion, (37) 201.
 Menus—*see also* Diet and Meals.
 for boys, (29) 464.
 children, (31) 760.
 logging camps, (32) 459.
 negro farmers, (36) 562.
 making, (31) 68; (33) 364.
 outlining and planning, (30) 559.
 suggestions, (38) 366, 662.
 Menyanthes trifoliata, new glucosid from, (26) 24.
 Menziesia glabella, toxicity, (31) 376.
 Meracantha contracta, life history, (35) 261.
 Meraporus crassicornis n.sp., description, (30) 661.
 Mercurialis annua—
 analyses and feeding value, (33) 70.
 inheritance of sex-ratios in, (36) 522.
 Mercuric chlorid—
 and mercuriophen as antiseptics, (39) 586.
 antiseptic value, (40) 182.
 detection in wood, (26) 242.
 effect on catalytic power of soils, (28) 118.
 effect on complement and antibody production, (40) 287.
 effect on germination of seeds, (26) 820.
 insectical value, (39) 762.
 use in seed treatment, (39) 851.
 Mercuriophen—
 as germicide, (38) 481.
 toxicity, (39) 586.
 Mercury—
 as growth stimulant for hemp, (33) 432.
 chlorophenol as a fungicide, (33) 846.
 detection in urine, (39) 715.
 detection in water, (34) 410.
 determination, (40) 712.
 oxid, effect on germination of seeds, (29) 528.
 preparations, fungicidal value, (37) 247.
 purification, apparatus for, (37) 503.
 suspended in gas, evaporation, (38) 210.
 toxic effect on plants, (38) 629.
 vapor lamp, photochemical effects from, (29) 213.

- Mercury—Continued.
vapor light, effect on germination—
and early growth of plants, (33) 826.
of seeds (30) 827.
- Meria laricis, notes, (29) 156.
- Merisus—
destructor, studies, (35) 466.
subapterus, *see* *Micromelus subapterus*.
- Mermis sp., notes, (27) 456; (30) 362.
- Merodon equestris—
life history, (32) 350.
notes, (27) 53, 356, 359, 457; (30) 56, 458, 757;
(31) 757.
- Meromyza americana—
notes, (29) 252; (37) 160.
parasites of, (31) 355.
- Merula migratoria, coccidiosis in, (26) 187.
- Merulius—
as affected by fluorin, (32) 308.
dry rot on wattle, (33) 545.
- lacrymans—
effect on greenheart, (34) 56.
germination studies, (32) 150.
growth as affected by tannic and gallic
acids, (27) 654.
injurious to telegraph poles, (33) 745.
notes, (26) 551, 752; (31) 248, 547; (35) 252;
(37) 253; (39) 553.
pigment formation by, (28) 751.
protection of timber from, (28) 246.
resistance of oak wood to, (32) 150.
studies, (29) 157, 852; (30) 850; (40) 350.
treatment, (33) 151.
- sclerotium, description, (29) 554.
spp., studies, (28) 751.
studies, (32) 845.
sylvestris, studies, (34) 547.
- Mesembrianthemum—
junceum, ash analyses, (36) 429.
mahoni roots as a yeast substitute, (29) 460.
rupicola, analyses and digestibility, (32) 167.
- Mesembryanthemum—
gas interchange, (40) 29.
rate and course of growth, (40) 30.
- Meshel grass, analyses, (28) 768.
- Mesidia gillettei n.sp., description, (31) 458.
- Mesochorus—
luteipes, notes, (30) 59.
n.spp., descriptions, (26) 352.
nigrisignis, notes, (28) 160.
pluiseophilus n.sp., description, (30) 256.
sp., notes, (28) 558.
- Mesogramma polita, life history, (34) 358.
- Mesoleius—
tenthredinis, notes, (30) 362; (38) 62.
transfuga, notes, (30) 362.
- Mesoleuca truncata, notes, (32) 556.
- Mesostenus pomonellae n.sp., description, (28) 162.
- Mesquite—
aerial galls of, (30) 751.
analyses, (28) 464.
beans for pigs, (38) 675.
blight, description, (30) 248.
commercial possibilities, (37) 747.
curly, as a forage crop, (31) 829.
eradication, (33) 299.
notes, (28) 643.
seeding on ranges, (30) 35.
trunk diseases of, (31) 751.
- Mess management, military hospital, (40) 866.
- Messer barbarus, injurious to tobacco, (30) 759.
- Mestocharis williamsi n.sp., description, (26) 152.
- Mesua ferrea, oil content, (31) 234.
- Metabolic water, production and rôle, (27) 201.
- Metabolism—
abnormal, in infants, (36) 865.
abnormalities in, (32) 78.
and energy of men, treatise, (32) 663.
and nervous system, relationship, (28) 765.
and vitality, digest of data, (31) 265.
as affected by—
air breathed, (32) 663.
disease, (32) 563.
food, (30) 365; (33) 753.
fruit juices, (28) 66.
light, (29) 567.
malnutrition, (32) 664.
meteorological conditions, (31) 362.
muscular work, (32) 67.
reduced diet, (39) 567.
- Metabolism—Continued.
as affected by—continued.
saccharin, (26) 257.
sterilization of air, food, and surroundings,
(28) 569.
sugar, (27) 871.
sulphur compounds, (26) 69.
underfeeding and subsequent abundant
feeding, (31) 464.
undernutrition, (30) 365.
- basal—
and body surface, (33) 567.
during growth period, (32) 697.
factors affecting, (33) 264.
of normal men and women, (33) 264.
relation to creatinin elimination, (32) 359.
- cage for goats, description, (27) 71.
- cage for rats, (28) 272.
- cage for swine, (31) 269; (33) 380.
- calcium and magnesium, (39) 875, 876.
- carbohydrate, *see* Carbohydrate metabolism.
- chemistry, (28) 201; (32) 399.
- chemistry of, treatise, (35) 765.
- creatin-creatinin, (39) 571, 873.
- during experimental marches, (30) 169.
- during fasting, (32) 166.
- during mental work, (27) 273; (29) 768; (31) 363.
- during pregnancy and lactation period, (31) 663.
- endogenous, in pigs, (30) 268.
- energy—
and protein, relation, (32) 563.
as affected by overfeeding, (28) 264.
during muscular work, (32) 765.
of fowls, (33) 472.
of hospital children, (33) 756.
- experiments—
analytical error in, (36) 164.
at Carnegie Institution, (32) 565.
automatic balance for, (33) 167.
comparison of methods, (35) 271.
mineral, with swine, (30) 99.
review of, (30) 364.
under decreased partial pressure of oxygen,
(32) 860.
- with animals, (29) 62.
- athletes and nonathletes, (33) 263.
- calves, (26) 768.
- cattle, (28) 68; (32) 98.
- cows, (27) 775.
- cows, technique, (39) 676.
- dogs, (26) 263, 468; (28) 67, 568, 866, 867,
868; (29) 165; (31) 464; (33) 754, 755, 869
- ducks, (29) 171.
- Eskimos, (31) 260.
- frogs, (30) 563.
- infants, (30) 562; (34) 68, 462.
- lambs, (33) 761.
- man, (26) 764, 865; (27) 366, 666; (28)
868; (29) 62, 164, 165; (31) 465; (34)
68; (35) 369, 666; (36) 763; (37) 266.
- mares, (28) 269.
- men and women at rest, (32) 165.
- pigs, (28) 469; (30) 570, 868; (31) 268;
(32) 170; (33) 375, 465.
- sheep, (26) 164, 469; (27) 569; (28) 362.
- vegetarians and nonvegetarians, (33)
263.
- fats and carbohydrates in, (29) 269.
- following food ingestion, (40) 270, 868.
- gaseous—
as affected by food intake, (26) 160.
as affected by humidity, (27) 869.
as affected by muscular work, (29) 167.
in cold-blooded animals, (30) 563.
in gymnasts, (34) 261.
in infants, (32) 461.
- in a case of leukemia during radium treatment,
(40) 566.
- animals, (26) 265.
- animals as affected by temperature, (32) 765.
- Aspergillus niger, (30) 727.
- boys, (40) 868.
- chicory seedlings, (28) 821.
- guinea pigs, (38) 572.
- infants, (27) 767; (33) 464; (39) 876.
- infants, mineral salts in, (29) 366.
- insects, (39) 761.
- malarial fever, (40) 868.
- men, women, and children, (39) 568.
- nitrogen hunger, (26) 764.

Metabolism—Continued.

- in old age, (26) 566, 664.
- plants, (26) 265, 326; (38) 729.
- plants as affected by acid and alkaline solutions, (32) 626.
- plants as affected by etherization, (26) 127.
- quiet or sleeping dogs, (28) 868.
- white dogs as affected by light, (31) 563.
- women, (40) 174.
- young trees, (27) 425.

increased, after food ingestion, (30) 168.

intermediary, glycine and amino-aldehyde in, (40) 71.

- ketonic function in, (40) 464.
- maximum and minimum, (28) 461.
- mineral, of milch cows, (35) 481; (37) 169; (38) 779; (40) 373.

nitrogen, of bacteria, (39) 110.

nuclein, of pigs, (26) 363.

of a dwarf, (33) 754.

acid-fast bacteria, (33) 769.

ammonium salts, (30) 64.

bacteria in milk, (31) 873.

calcium and phosphoric acid in infants, (28) 166.

creatin and creatinin, (26) 158; (32) 764.

creatin in growing pigs, (28) 269.

diet poor in nitrogen, (29) 165.

fat, factors affecting, (26) 471.

fats, (27) 665; (38) 66; (39) 874.

glycine, (39) 873.

hypophysectomized dogs, (26) 766.

incubating eggs, (26) 877.

lecithin, (26) 159, 765.

lecithin and cholesterol, (32) 764.

mineral matters, (30) 562.

mustard oils, (39) 668.

nitrogenous food, (32) 359.

nuclein, paper on, (26) 69.

organic and inorganic phosphorus compounds, (33) 462.

organic phosphorus compounds, (29) 166.

phosphoric acid, (26) 765.

phosphorus and nitrogen, (30) 465.

phosphorus, review of literature, (32) 601.

scurvy in an adult, (28) 868.

organic nutrients in, (31) 361.

protein, (26) 158, 359, 869, 870; (32) 359; (39) 572, 772.

protein, after excessive water ingestion, (32) 663.

protein, monograph, (28) 167.

protein, of the fetus, (26) 363.

protein, studies, (26) 764; (28) 664, 665; (31) 661.

purin, (29) 365; (31) 760.

purin, as affected by potassium salts, (28) 261.

purin in ungulates, (32) 166.

relation—

of nitrogen to sulphur in, (26) 765.

to nuclein, (27) 574.

to osmosis, (28) 667.

to thyroid secretion, (29) 868.

respiratory, as affected by salts, (32) 860.

respiratory, in infants, (26) 69.

review of investigations, (30) 560.

studies, (26) 158, 671, 709.

treatise, (40) 463.

uric acid, studies, (40) 175.

Metachaeta helymus, notes, (33) 749.

Metachromatin in the vegetable cell, (40) 325.

Metal flumes, preservatives for, (36) 585.

Metal reinforcement, corrosion in concrete, (29) 687.

Metalaptes torquatus n.g. and n.sp., description, (38) 460.

Metallic—

colloids, bactericidal properties, (32) 272.

oxides and salts, fertilizing value, (31) 821.

salts, reaction with soluble carbonates, (31) 504.

salts, rôle in nitrogen assimilation by green plants, (28) 328.

Metallonidea brittanica n.subg. and n.sp., description, (34) 857.

Metals—

colloidal, effect on Spirogyra, (31) 129.

colloidal, therapeutic value, (38) 585.

detection in ethyl alcohol, (29) 312.

effect on development of Aspergillus niger, (30) 824.

heavy, effect on isolated intestine, (37) 266.

Metamasius—

hemipterus decoratus, notes, (26) 354.

hemipterus, notes, (26) 60; (29) 52.

ritchiei n. sp., description, (37) 161.

ritchiei, notes, (38) 163; (40) 259.

sericeus, notes, (34) 753; (37) 162; (39) 58.

spp., affecting coconut palms, (29) 858.

Metamorphosis, retrogressive, in peaches, (27) 230.

Metaoxytoluic acid in soils, (30) 610.

Metaphis n.g., description, (40) 60.

Metaphosphate, assimilation by plants, (29) 624.

Metapocyrtus n.g. and n.sp., descriptions, (28) 561.

Metarrhizium anisopliae—

description, (33) 459.

in Porto Rico, (39) 868.

in Queensland, (32) 555.

infection tests, (38) 165.

notes, (28) 746, 757; (29) 52, 53, 652; (30) 356.

use against sugar cane pests, (29) 846.

Metastrongylus apri—

life history and treatment, (35) 182.

notes, (37) 779.

Metazoa, diseases due to, (35) 379.

Meteor, train of, (31) 213.

Meteoridae, British, notes, (31) 159.

Meteorologic and magnetic phenomena, relation, (31) 615.

Meteorological—

aspects of oceanography, (35) 619.

conditions—

effect on propagation of sound, (32) 25.

relation to fungi, (27) 543.

relation to grape downy mildew, (28) 448.

relation to growth and yield of oats, (29) 509.

relation to plant diseases, (29) 44.

cooperation, Pan American, (33) 420.

courses for aeronautical engineers, (37) 807.

data, (32) 118, 316, 614.

data, recording and summarizing, (39) 809.

elements, relation to soil temperature, (29) 618.

explorations in the Antarctic, (31) 615.

factors, effect on milk production, (28) 774.

factors, relation to soils, (28) 116.

monthly, Chinese, (37) 513.

observations—see also Climate, Rainfall,

Weather, etc.

at Berkeley, California, (31) 316; (35) 209;

(36) 616; (40) 716.

Cirencester, England, (31) 416.

different elevations, (39) 809.

Hamburg Observatory, (31) 812.

Honolulu, (26) 614.

Manila, (40) 19.

Ploti Experiment Station, (28) 213;

(29) 813.

University of California, (29) 121.

Wauseon, Ohio, (33) 825.

Wisley, (28) 315; (32) 211; (34) 14; (40)

117, 810.

importance in engineering, (28) 415.

in Alaska, (28) 415; (29) 722; (32) 25; (33)

616; (36) 418, 436; (39) 114.

Alberta, (29) 15; (30) 416.

an Egyptian cotton field, (30) 17.

Arizona, (37) 719.

Belgium, (30) 17.

British Isles, (31) 214; (38) 116.

Canada, (27) 719; (30) 317; (31) 718; (32)

25, 418, 510; (33) 728; (36) 97; (38) 619.

Ceylon, (40) 811.

Colorado, (28) 25.

Connecticut, (27) 414; (32) 118; (38) 416.

Egypt, (26) 816; (33) 509.

England, (27) 510; (33) 509.

England and Wales, (30) 510.

France, (27) 211.

German East Africa, (37) 717.

Germany, (32) 810.

Great Britain, (28) 116; (33) 508.

Habana, (28) 213; (29) 813; (37) 513; (39)

419.

Hamburg, (29) 314.

Hawaii, (37) 116.

Idaho, (37) 16; (39) 321.

India, (32) 419.

Iowa, (29) 812; (30) 510; (33) 508; (39)

419.

Italy, (35) 718.

Kansas, (34) 339.

Meteorological—Continued.

observations—continued.

- in Kentucky, (26) 514, 614; (31) 316; (34) 615; (38) 618; (39) 418.
- Maine, (27) 414; (29) 121; (31) 117; (33) 19; (35) 209; (37) 314; (39) 114.
- Massachusetts, (26) 117, 416, 810; (27) 211, 510, 617; (28) 115, 415, 716; (29) 121, 415, 722, 812; (30) 317, 713; (31) 213, 415, 718; (32) 118, 418, 614; (33) 118, 321, 717; (34) 118, 414, 714; (35) 209, 420, 619; (36) 418; (37) 116, 619, 807; (38) 210, 618, 812; (39) 210, 419, 720, 811; (40) 210, 511.
- Michigan, (27) 115; (28) 416; (30) 618; (32) 614; (34) 714; (36) 719; (39) 114.
- Minnesota, (37) 210.
- Mississippi, (28) 299.
- Montana, (38) 318; (39) 616; (33) 599; (36) 208; (38) 318; (39) 131; (40) 417.
- Moscow, (33) 509.
- Nevada, (30) 618.
- New Brunswick, (35) 318.
- New Hampshire, (29) 722.
- New Jersey, (27) 718; (28) 716; (32) 510; (34) 144; (36) 811; (39) 720.
- New Mexico, (27) 414.
- New South Wales, (32) 316; (37) 513.
- New York State, (26) 214; (28) 115; (29) 812; (32) 614; (34) 118; (38) 13; (39) 17; (40) 511.
- New Zealand, (31) 21; (33) 807.
- North Dakota, (29) 209, 415; (31) 615; (32) 598; (35) 209, 229.
- Notts Co., England, (27) 211.
- Oder drainage basin, (26) 317.
- Ohio, (26) 214; (27) 211; (29) 722; (31) 615; (32) 717; (34) 118; (35) 508; (38) 116; (39) 812.
- Oklahoma, (40) 19, 617.
- Oregon, (34) 208.
- Oxford, England, (36) 208.
- Panama, (35) 116.
- Paris, (28) 416; (38) 417.
- Paris and vicinity, (37) 16.
- Pennsylvania, (28) 115; (34) 115, 118; (35) 507, 508; (38) 13.
- Philippines, (27) 617; (29) 813; (31) 812; (35) 116.
- plant-growth studies, (31) 614.
- Quebec, (38) 716; (40) 716.
- Rhode Island, (26) 715; (30) 510.
- Rindabella, (30) 511.
- Russia, (29) 509.
- St. Croix, (31) 133; (33) 807.
- Saskatchewan, (32) 316; (38) 116.
- Scotland, (38) 509; (38) 116.
- Stavropol, (38) 14.
- Sweden, (26) 416; (27) 719; (34) 510; (36) 208.
- Tennessee, (28) 716; (38) 318.
- Texas, (39) 128.
- Trinidad, (33) 211.
- Union of South Africa, (33) 211.
- United States, (26) 26, 27, 213, 613; (27) 115, 316, 413, 509, 616, 816; (28) 415, 716; (29) 120, 209, 510, 721, 812; (30) 416, 713; (31) 212, 213, 615; (32) 24, 118, 210, 316, 614, 810; (33) 19, 117, 320, 321, 508, 716; (34) 117, 413, 414, 614, 615; (35) 115, 116, 419, 506, 618, 619, 809; (36) 19, 207, 419, 615, 718, 719; (37) 115, 116, 314, 513, 619, 807; (38) 13, 209, 318, 510, 617, 618, 811; (39) 17, 209, 320, 511, 616, 718, 719; (40) 19, 117, 209, 416, 511, 617, 715, 716.
- Utah, (26) 416.
- Virginia, (29) 616; (33) 717; (39) 17.
- Wyoming, (26) 514; (28) 514, 599; (29) 812; (30) 619; (32) 717; (34) 615; (37) 314; (38) 114.
- Zanzibar, (38) 192.
- notes, (31) 811.
- on lightships, (37) 513.
- Truckee-Carson project, (28) 811.
- optics, progress in 1912, (31) 615.
- phenomena, average internal curve for, (35) 419.
- photography, (26) 118.
- radiotelegrams to mariners, (33) 118.
- research, statistical method, (40) 416.
- research, subjects for, (40) 615.

Meteorological—Continued.

- review for Paris region, (40) 511.
- service in Colombia, (37) 115.
- service in Dutch East Indies, (39) 512.
- services of different crop regions, (39) 718.
- station at Berkeley, California, report, (31) 615.
- stations in Korea, (33) 118.
- study, relation to agriculture, (28) 198.
- symbols, (35) 618.
- work in Chile, (27) 414.
- work in Russia, (28) 116.
- Meteorology—see also Climate, Rainfall, Weather, etc.
- agricultural, (35) 114; (40) 19.
- agricultural—
 - at International Institute of Agriculture, (30) 510.
 - commission for study of, (31) 415.
 - development by Weather Bureau, (33) 615.
 - estimating humidity in, (27) 315.
 - in Brazil, (36) 618.
 - Canada, (35) 15, 718; (36) 510.
 - European Russia, (33) 20.
 - foreign countries, (34) 504.
 - France, (27) 15; (29) 510.
 - Germany, (31) 19.
 - Great Britain, (34) 319.
 - Russia, (29) 314, 510; (34) 207.
 - Sweden, (31) 20.
 - United States, (36) 616.
 - U. S. Weather Bureau, (34) 601.
- increasing interest in, (28) 701.
- international importance, (34) 207.
- method of studying, (28) 115.
- notes, (33) 19.
- periodicity, (39) 317.
- possibilities, (38) 317.
- problems in, (36) 207.
- progress in, (28) 414.
- review of literature, (29) 811; (34) 714.
- theories of statistics and correlation in, (36) 419.
- treatise, (26) 513.
- wireless telegraphy in, (32) 117.
- and agriculture, paper on, (29) 120.
- and aviation, (38) 210, 812.
- antarctic, (34) 118.
- application to agriculture, (34) 606.
- as an exact science, (31) 212.
- at Lick Observatory, (32) 25.
- at Pan American Scientific Congress, (34) 615.
- bibliography, (26) 613; (31) 509, 715; (32) 810; (33) 320, 717.
- C. G. S. system in, (31) 615.
- course in, (26) 596.
- dynamic, (29) 314.
- economic aspect, (38) 317.
- effect on forest types, (34) 640.
- effect on plant diseases, (34) 840; (35) 844.
- history and status, (28) 715.
- in Argentina, (36) 510.
- Australia, (28) 27; (30) 511; (32) 811.
- Brazil, (34) 413.
- Brazil, treatise, (37) 619.
- British Empire, (38) 617.
- California, (34) 509.
- Canada, (34) 208; (38) 618.
- Finland, (27) 414.
- mathematics and physics courses, (33) 321.
- Minnesota, (26) 385.
- Netherlands and vicinity, (34) 614.
- New Zealand, (35) 210.
- Panama Canal Zone, (32) 614.
- the far east, (29) 121.
- international catalogue, (26) 715; (29) 510; (35) 318, 421.
- meaning of "fair" in, (34) 615.
- notes, (26) 613.
- of Greenland's inland ice and its foeohn, (38) 812.
- of Mount Rose, Nevada, (35) 505.
- of the moon, (35) 115.
- papers on, (34) 308; (39) 209, 512, 718; (40) 117, 416, 617.
- problems in, (29) 314.
- progress in, (26) 316; (28) 315; (32) 315; (33) 508.
- progress in England since 1866, (35) 317.
- relation to—
 - agriculture, (29) 314.
 - bird migration, (38) 511.
 - grape culture, (34) 234.

Meteorology—Continued.

- relation to—continued.
 - plant and animal life, (26) 513.
 - rust development, (27) 149.
 - winter rye culture, (34) 715.
- review of literature, (26) 338.
- station at Grand Saint-Bernard, (38) 812.
- textbook, (27) 315; (34) 13.
- treatise, (26) 615; (32) 24; (35) 808.
- use in European war, (36) 509.
- world bureau of, (34) 14.
- yearbook, (34) 494.

Meteors—

- notes, (35) 115, 618.
- notes to observers of, (29) 121.
- systematic observation of, (33) 717.

Meteorus—

- archipsidis n.sp., description, (30) 60.
- archipsidis, notes, (28) 755.
- dimidiatus, notes, (36) 155.
- ictericus, notes, (29) 562.
- laphygmae n.sp., description, (30) 256.
- manestreae n.sp., description, (31) 554.
- sp., notes, (27) 262; (29) 455.
- versicolor, bionomics, (39) 661.
- versicolor in Maine, (37) 459.
- versicolor, notes, (27) 456.

Meth, description and culture, (40) 231.

- Methacatin, periodids of, (34) 502.
- Methaemoglobinaemia, infective, in rats, (26) 581.
- Methane, analysis, apparatus for, (40) 111.
- Methi as fodder crop, (37) 137.

Methyl alcohol—

- as source of carbon for molds, (30) 226.
- assimilation by yeast and fungi, (28) 824.
- detection, (27) 815; (30) 210.
- detection in ethyl alcohol, (29) 312.
- determination, (29) 411, 810; (31) 115; (37) 111; (40) 15, 204, 310, 413.
- determination in—
 - alcoholic beverages, (38) 316.
 - presence of ethyl alcohol, (36) 806.
 - spirits, etc., (30) 315.
- effect on soil microorganisms, (31) 27.
- formation by yeasts, (38) 316.
- in foodstuffs and behavior in the body, (40) 204.
- in silage, (28) 609; (32) 410.
- pathological effects on human system, (34) 662.
- treatise, (28) 511.

Methyl—

- carbamate, assimilation by plants, (26) 32.
- glucosid, cleavage by fungi and yeast, (30) 11.
- glycocol, effect on plant growth, (34) 31.
- pentose, determination in grapes and wines, (29) 205.
- salicylate, insecticidal and larvicidal value, (34) 359.
- salicylate, methods of analysis, (37) 415.
- xanthin in tea, (31) 358.
- xanthins, action on isolated intestine, (37) 471.

 β -Methyl fructosid, notes, (35) 502.

Methylamin sulphate, nitrification rate, (32) 124.

Methylamins, assimilation by plants, (26) 32.

Methylene blue—

- action on abortion bacilli, (34) 679.
- bactericidal action, (29) 882.
- effect on—
 - decomposition of pyroracemic acid, (37) 202.
 - formation of carbon dioxide by dead yeast, (37) 203.
 - plant respiration, (27) 523.
 - respiration and alcoholic fermentation of plants, (28) 825.
- milk method for oxygen determination, (40) 613.
- solution, preparation, (34) 612.
- use against contagious abortion, (30) 184; (33) 278.
- against hog cholera, (33) 86.
- against mastitis, (32) 479.
- against tuberculosis, (29) 481; (31) 583.
- in chemical analysis, (37) 111.
- in iodometric titrations, (28) 311.
- in judging milk, (28) 473.

Methylguanidin in horseflesh, (30) 61.

l-Methylinosit, in Para rubber, (27) 616.

Methylpentosans in germinating bean seeds, (27) 730.

Metol, preparation, (40) 504.

Metorchis albidus, infection of pigs with, (38) 82.

Metric system—

- conversion coefficients for, (30) 697.
 - for aeronautics, (36) 718.
 - Metritis, bovine, etiology, (36) 279.
 - Metrosideros, Hawaiian species, (38) 45.
 - Metzneria lapella as a useful insect, (33) 859.
 - Meun mutellina, analyses, (31) 863.
 - Meyer, F. N., biographical sketch, (39) 200.
 - Mgongo nuts, oil from, (40) 803.
 - Miastor americana, pedogenesis in, (26) 147.
 - Mica—
 - as source of potash, (27) 520; (29) 215; (31) 621; (34) 328.
 - deposits in Georgia, (34) 328.
 - schist, fertilizing value, (27) 725; (28) 33.
 - Micaceous minerals, importance in agriculture, (33) 722.
 - Mice—*see also* Mouse and Mus.
 - Ascaris infection in, (39) 286, 681.
 - breeding and rearing, (27) 754.
 - breeding experiments, (34) 864.
 - breeding for disease resistance, (28) 370.
 - control in orchards, (39) 860.
 - destruction, (27) 888; (38) 356.
 - destruction in seed rooms, (38) 241.
 - destruction with bacteria, (26) 579; (31) 57.
 - destructive to standing grain, (28) 653.
 - development of ascarid larvae in, (37) 374.
 - directions for raising, (38) 258.
 - feeding experiments, (29) 767.
 - field—
 - as farm and orchard pests, (33) 250.
 - control, (29) 651; (39) 153.
 - destruction by snakes, (34) 751.
 - dissemination and control in Bavaria, (34) 850.
 - notes, (37) 156.
 - of Great Britain, (35) 252.
 - relation to seven-day fever, (40) 85.
 - fungus disease, (39) 490.
 - Gaertner group bacilli in, (30) 355.
 - grasshopper, notes, (34) 850.
 - harvest, of Great Britain, (35) 656.
 - harvest, revision, (31) 647.
 - immunity against anthrax bacillus, (29) 378.
 - immunization against trypanosomes, (29) 379.
 - inheritance in, (28) 531.
 - inheritance of color in, (26) 472; (27) 769; (30) 264; (35) 776; (40) 275.
 - inheritance of spotting in, (34) 466.
 - injurious to forest trees, (26) 299.
 - inoculation experiments, (27) 555.
 - meadow, in Colorado, (35) 52.
 - meadow, studies, (40) 254.
 - meat feeding experiments with, (30) 260.
 - microbes affecting, (27) 52.
 - new, from Mexico, (37) 757.
 - new, meadow, from Wyoming, (37) 846.
 - new pocket, from Wyoming, (37) 758.
 - notes, (28) 653.
 - of Great Britain, (34) 57.
 - ovulation in, (40) 663.
 - parasites, (27) 754.
 - pine, from Florida, (35) 656.
 - protecting trees against, (27) 344.
 - relation to equine influenza, (28) 482.
 - suckling, gestation in, (40) 469.
 - susceptibility to pneumonic plague, (28) 180.
- white—
 - analyses at different stages of growth, (36) 663.
 - gestation period in, (28) 173.
 - heredity in, (34) 370.
 - infection with avian tuberculosis, (26) 583.
 - meat-feeding test, (26) 176.
 - morphology of blood, (28) 777.
 - normal growth of, (35) 864.
 - white-footed, remedies, (31) 846.
 - yellow and agouti factors, association, (27) 468.
 - yellow, embryology, (38) 573.
 - yellow homozygous, death in utero, (38) 573.
- Micena (?) sp. on coffee, (38) 51.
- Michelia champaca, oxides in, (28) 129.
- Michigan—
 - College, agricultural education in, (31) 692.
 - College, history, (38) 794.
 - College, notes, (27) 300, 698; (28) 94, 397, 900; (29) 300; (30) 95; (31) 99, 300, 600; (32) 694; (33) 700; (34) 96, 695, 797; (35) 500; (36) 196, 499, 695; (37) 197; (38) 798.

- Michigan—Continued.
 Station, financial statement, (27) 196; (28) 493.
 Station notes, (26) 396; (27) 300; (28) 797, 900;
 (29) 300, 397; (30) 600; (31) 300, 600; (33) 700;
 (37) 197; (38) 798.
 Station, quarterly bulletin, (40) 97, 797.
 Station, report, (30) 696; (32) 693; (34) 795; (36)
 795; (39) 397.
 Station, report of director, (27) 196; (28) 493.
 Upper Peninsular Station, report, (40) 796.
- Micriurata, composition, (36) 674.
- Microbes—
 and toxins, treatise, (26) 373.
 destructive to mice and rats, (27) 52.
 in indoor and outdoor air, (32) 211.
 production of lipase by, (26) 803.
 separation and removal from water, (33) 684.
- Microbial diseases, treatise, (29) 476.
- Microbiology—
 agricultural, review of literature, (30) 378.
 laboratory manual, (35) 593.
 of animal diseases, treatise, (32) 474.
 treatise, (26) 372; (27) 223, 575; (31) 177; (37) 76.
- Microbiose, notes, (38) 647.
- Microbracon—
 cephi n.sp., description, (40) 761.
 dorsator, notes, (31) 752.
 hemimenae n.sp., description, (34) 456.
 hyslopi n.sp., description, (29) 563.
 hyslopi, parasitism, (27) 553.
 juglandis, oviposition and feeding in, (26) 458.
 mellitor, notes, (27) 864.
 sanninoideae n.sp., description, (38) 165.
 sp., notes, (28) 658.
 vestitidica n.sp., description, (29) 563.
- Microcalorimeter—
 differential, description, (26) 872.
 for bacteria, (30) 66.
- Microcentrum rhombifolium, studies, (33) 451.
- Microcera—
 fuljikuroi n.sp., notes, (30) 455.
 sp., notes, (27) 860.
 sp., parasitic on citrus white fly, (29) 251.
 sp., spraying experiments with, (31) 751.
- Microchemistry—
 of plants, treatise, (30) 310; (32) 308.
 textbook, (29) 801.
- Microcitrus n.g. and n.sp., descriptions, (34) 235.
- Microcline—
 as source of potash, (26) 426; (30) 216.
 decomposition by soil bacteria and yeast, (31)
 121.
 extraction of potash from, (27) 323.
 fertilizing value, (26) 725; (39) 728.
- Micrococci in udder infections, (40) 87.
- Micrococcus—
 acido proteolyticus I and II, development in
 cheese, (26) 881.
 lactis vars., itinerary in butter manufacture,
 (39) 78.
 melitensis—see also *Bacillus melitensis*.
 agglutinability, (27) 577.
 agglutination by normal milk, (32) 276.
 agglutination of different strains, (29) 581.
 agglutinins in milk and blood serum of
 cows, (32) 876.
 antibodies for in milk, (33) 84.
 deviation of complement with, (30) 578
 in France, (32) 271.
 investigations, (29) 780.
 notes, (26) 782; (27) 379.
 organism resembling, (27) 681.
 resistance to lactic-acid fermentation, (26)
 484.
 mucofaciens in milk, (29) 376.
 mucofaciens n.sp., description, (28) 581.
 n.spp., descriptions, (26) 552.
 nigrofaciens affecting white grubs, (32) 61.
 nigrofaciens, notes, (33) 554.
 paramelitensis, identification, (29) 582.
 prodigiosus, isolation from cheese, (26) 479.
 prodigiosus, notes, (26) 853.
 radiatus, in sugar, (26) 505.
 roseus, notes, (29) 157.
 sp., notes, (27) 751.
 spp., in conjunctival sac of horses and bovines,
 (26) 176.
 tetragenus, ammonifying power, (31) 317.
 tetragenus, notes, (29) 179.
 uritici, notes, (29) 243.
- Microcryptus osculatus, notes, (38) 565.
- Microdiplodia vitigena, n.sp., description, (26) 446.
- Microdon, n.spp., descriptions, (37) 766.
- Microdontomerus fumipennis n.sp., description,
 (36) 556.
- Microdus—
 (Bassus) earinoides, parasitic on bud moth, (34)
 250.
 diatraeae n.sp., description, (40) 554.
 inedius, notes, (29) 455.
 ocellanae n.sp., description, (30) 161.
- Microfauna—
 of rice soils, (33) 23.
 soil, device for obtaining, (30) 28.
- Microflaria—
 ninae kohlyakimovi n.sp., description, (33) 583.
 rosenau n.sp., description, (26) 653.
- Microfilariae, staining, (31) 383.
- Microfilariasis of horses, studies, (33) 583.
- Microflora—
 of Roman experimental field, (30) 516.
 of Stilton cheese, (28) 879.
 soil, device for obtaining, (30) 28.
- Microgaster—
 auripes, notes, (28) 160.
 epagoges n.sp., description, (38) 165.
 flaviventris, notes, (28) 355.
 sp., notes, (36) 655.
- Microgasteridae, notes, (40) 862.
- Microgasterinae, new African, (40) 458.
- Microlepidoptera—
 injurious to fir and spruce, (34) 855.
 new, descriptions, (36) 254.
 new genera and species from Panama, (34) 855.
- Micromelus subapterus, studies, (33) 466.
- Micromycetes, variation in, (38) 731; (39) 124.
- Micromys minutus, history, (35) 656.
- Microorganisms—see also *Bacteria and Organisms*.
 aerobic, in omasum and colon of bovines, (31)
 679.
 aerobic, nitrogen fixation by, (31) 721.
 as affected by—
 basic compounds, (27) 229.
 poisons, (32) 308.
 pressure, (32) 416.
 radioactivity, (30) 524; (33) 23.
 spices, (35) 557.
 X-rays, (27) 225.
 assimilation of ammonia and nitrate by, (26)
 617.
 behavior in brine, (30) 223; (33) 525.
 biochemical activity, (34) 32.
 causing deterioration of sugar, (35) 316.
 cellulose-decomposing capacity of, (31) 14.
 chemical reactions of, (28) 202.
 chlorophyll-bearing, studies, (28) 727.
 cleavage of proteins by, (28) 503.
 cultivation, (26) 355.
 culture, treatise, (30) 133.
 decomposition of fat by, (28) 372.
 decomposition of foods by, (29) 564.
 denitrifying, respiration, (31) 827.
 destruction by cold, (38) 885.
 destruction of cellulose by, (28) 628.
 determination in milk, (32) 809.
 differentiation, (37) 502.
 dissemination by ants and bees, (31) 849.
 distribution by tobacco smoke, (27) 830.
 effect on—
 betain, (33) 312.
 butter, (26) 576.
 soils, (31) 818.
 solubility of phosphates, (29) 423.
 fixation of nitrogen by, (28) 323, 522; (29) 819.
 fixation of phosphoric acid by, (27) 216.
 heredity in, (30) 329.
 in air and food, effect on nutrition, (36) 562.
 Baltimore milk, (31) 373.
 Brindza cheese, (33) 277.
 brines, (30) 431.
 conjunctival sac of horses and bovines, (26)
 176.
 dried fruits and vegetables, (34) 460.
 fermenting tea, (32) 111.
 fresh eggs, (29) 765.
 kumiss and kalyk, (26) 779.
 lime-sulphur mixtures, (31) 205.
 maple sap, (29) 113, 115, 157.
 mesenteric glands of cattle, (28) 885.
 night soil, effect on soil productivity, (27) 722.

Microorganisms—Continued.

- in sausage, (27) 461.
- silage, studies, (33) 224.
- soils, (29) 122, 123.
- soils as affected by cold, (29) 316.
- soils, notes, (28) 323.
- sugar-house products, (32) 22.
- tea, investigations, (28) 512.
- method of study, (39) 632.
- morphology and culture, (26) 372.
- nonlactose fermenter, in flies, (28) 756.
- passage through bisque filter, (26) 676.
- pathogenic—
 - bibliography, (28) 178.
 - distribution by flies, (28) 756.
 - handbook, (30) 379; (32) 78.
 - notes, (26) 276, 676.
 - review of investigations, (28) 178.
 - textbook, (26) 677.
 - transmission by stable flies, (29) 760.
 - treatise, (38) 480.
- penetration of egg shells by, (29) 765.
- permeability of filters by, (28) 677.
- persistence in pupae and imagines of house flies, (26) 251.
- reduction of stains by, (29) 611.
- relation to—
 - aroma in tea, (26) 309.
 - cheese ripening, (37) 503.
 - concentration of nutrient substrate, (33) 630.
 - nitrogen assimilation in meadows, (26) 422.
 - organic soil constituents, (29) 817.
- removal from water, (35) 187.
- rôle in—
 - chemical transformation of soil, (38) 322.
 - determination of soil fertility, (26) 123.
 - formation of clay, (27) 619.
 - nitrogen fixation, (26) 37.
 - silage fermentation, (36) 802.
 - utilization of mineral phosphates, (29) 870.
- soil infection by, (33) 444.
- treatise, (27) 204.
- treatment with copper sulphate, (39) 27.
- Micropalpus compus*, parasitic on grapevine sphinx, (26) 250.
- Microplitis*—
 - mellanae* n.sp., description, (26) 352.
 - rufiventris* n.sp., (33) 659.
 - spp., notes, (28) 253.
- Micro-respiration apparatus, description, (32) 67.
- Microscope—
 - electrically heated slide chamber, (37) 410.
 - slides, marking, (38) 732.
- Microscopes, masonry bases for, (35) 899.
- Microscopical technique, encyclopedia, (26) 82.
- Microscopy, errors in, (37) 205.
- Microsphaera—
 - alni*, investigations, (37) 155.
 - alni quercina*, notes, (33) 745.
 - alni*, treatment, (39) 553.
 - quercina*, notes, (26) 551; (27) 753; (30) 849.
 - spp., investigations, (27) 548.
- Microspira—
 - carcinopaeus*, description, (32) 442.
 - desulfuricans, notes, (34) 217.
- Microsporidiosis—
 - in bees, investigations, (27) 761.
 - in hymenoptera, notes, (27) 459.
- Microsporium equinum*, studies, (28) 184.
- Microstroma—
 - juglandis*, notes, (35) 454; (38) 253.
 - juglandis robustum* n.var., description, (37) 844.
 - platani* n.sp., description, (28) 652.
 - platani*, relation to *Gnomonia veneta*, (30) 351.
- Microterys—
 - flavus*, notes, (29) 654.
 - speciosissimus* n.sp., description, (26) 254.
- Microthrips piercei* n.g. and n.sp., description, (31) 550.
- Microthyrium* sp. on rubber, (37) 253.
- Microtoma carbonaria*, destruction by white fungus, (26) 454.
- Microtrombidium—
 - akamushi*, studies, (39) 870.
 - pusillum* affecting man, (31) 480.
 - pusillum* on goats, (31) 284.

Microtus—

- agrestis*, control in France, (29) 651.
- californicus*, revision, (40) 254.
- Microtisea misella*, notes, (28) 754.
- Microzmys*, notes, (38) 647.
- Middlemen in English business between 1660 and 1760, (33) 787.
- Middlings—see also Wheat, Oat, Rye, etc.
 - analyses, (26) 362, 468, 568, 714; (27) 68, 775; (28) 265; (29) 270, 367, 467, 570, 769; (30) 371; (31) 168, 366, 467, 663; (32) 64, 465, 568, 667, 862; (33) 71, 371, 568, 665, 870; (34) 168, 263, 371, 469, 566; (40) 470.
 - calcium content, (32) 64.
 - standard, analyses, (27) 170.
 - v. corn for pigs, (31) 869.
- Midge, giant, notes, (32) 554.
- Midges, gall, adaptation in, (31) 155.
- Midges of Illinois, (34) 654.
- Mignonette, heredity of self-sterility in, (29) 136.
- Mildew—see also host plants.
 - downy, notes, (32) 544.
 - downy, treatment, (27) 652.
 - fungi, notes and treatment, (27) 250.
 - notes, (27) 351.
 - spread from wild to cultivated plants, (26) 243.
- Mildews of Great Britain, treatise, (30) 745.
- Miliary necrosis of the organs in calves, (26) 381.
- Milichinae, synopsis, (29) 657; (30) 254.
- Military—
 - hygiene and sanitation, textbook, (34) 369.
 - instruction in agricultural colleges, (32) 11; (35) 599.
- Milk—
 - abnormal, detection, (26) 87; (33) 177.
 - abortion bacillus in, (29) 282, 305, 500, 778; (31) 79; (33) 679, 875.
 - acid and rennet test, comparison, (29) 75.
 - acid-fast bacilli in, (31) 584.
 - acidity, (27) 113; (29) 579; (31) 613.
 - acidity—
 - alcohol test for, (26) 314.
 - cause, (32) 606.
 - determination, (29) 75, 807; (33) 112, 208.
 - effect on inactivation of peroxidase, (40) 11.
 - relation to *Streptococcus lacticus*, (33) 675.
 - studies, (32) 872; (37) 373.
 - action of heat on after addition of sodium bicarbonate, (40) 613.
 - action of rennet on, (26) 477; (28) 177.
 - addition of limewater to, (36) 559.
 - adenin and guanin in, (38) 506.
 - adulteration, (30) 678; (38) 577.
 - adulteration, detection, (26) 314; (28) 809; (29) 376, 612; (30) 508; (31) 175; (32) 207; (33) 714.
 - adulteration, graphic representation, (30) 760.
 - agglutinins for *Micrococcus melitensis* in, (32) 876.
 - albumin, analyses, (30) 67; (32) 259.
 - albumin, identification in solutions, (26) 201.
 - albumin, in infant feeding, (34) 258.
 - alcohol test, (33) 112, 113, 115; (36) 807.
 - alizarol test, (33) 112.
 - alkali-forming bacteria in, (33) 675.
 - alkalinity and peroxidase, synonymy, (27) 507.
 - altered, methods of analysis, (31) 810.
 - analyses, (26) 80, 171, 369, 711, 770; (27) 375, 473, 676, 677; (28) 65, 178, 207, 372, 565, 579, 811; (29) 59, 206, 207, 673; (30) 178, 258, 712; (31) 358, 462, 509, 672, 760; (32) 162, 369, 412, 577; (33) 277, 577; (36) 614; (38) 73.
 - analysis, casein media for, (26) 576; (29) 718.
 - analytical standards for, (26) 712.
 - anaphylactic reaction, (29) 612.
 - and its hygienic relations, treatise, (37) 174.
 - and its products, bibliography, (31) 176.
 - and its products in the home, textbook, (33) 899.
 - and its products, treatise, (28) 473, 674; (34) 380.
 - and whey, acidity, (40) 11.
 - animal alkaloid content, (26) 212.
 - antibodies for *Micrococcus melitensis* in, (33) 84.
 - antineuritic substances in, (36) 665.
 - antiscorbutic value, (39) 771; (40) 272.
 - arsenic in, (27) 677.
 - artificial, from soy beans, (33) 660.
 - artificial, preparation, (27) 74; (34) 558.

Milk—Continued.

as affected by—

- age of cow, (38) 578.
- alkali water, (27) 282.
- alkalis, (28) 18.
- bacterial flora of feeding stuffs, (32) 75.
- bichromate of potash, (27) 500.
- boiling, (31) 505.
- breed and individuality, (28) 578.
- cattle diseases, (32) 478, 577.
- cleanliness of cows and barns, (39) 179.
- cold storage, (27) 376; (29) 268.
- cooking, (29) 160.
- cottonseed products, (31) 370.
- feeding fat soluble dyes, (27) 671.
- feeding stuffs, (26) 476; (28) 674; (30) 475, 573, 574; (34) 471, 570, 671.
- foot-and-mouth disease, (33) 577.
- freezing, (27) 473.
- gestation, (39) 280.
- grazing and dry-stall feed, (33) 275.
- green alfalfa, (39) 281.
- hypoplasia mammaria, (27) 176.
- lactation stage, (28) 470.
- parturition, (37) 172.
- pasteurization, (29) 109.
- phosphorus compounds in rations, (26) 775.
- plane of nutrition, (35) 774; (36) 669; (37) 272.
- potassium bichromate, (31) 507.
- sodium citrate, (31) 710.
- sodium fluoride, (40) 613.
- stage of lactation, (39) 280.
- sulphate of ammonia, (27) 506.
- temperature, (39) 181.
- utensils, (39) 179.

as cheap food, (36) 862.

- food, (37) 669.
- sole diet of ruminants, (40) 767.
- source of diphtheria infection, (40) 79.
- source of vitamin, (39) 570.

Australian, composition, (26) 775.

Babcock test, (40) 378.

Bacillus abortus in, (27) 231; (39) 83; (40) 184.

Bacillus abortus in, detection, (32) 674.

bacteria—

- action on proteins, (40) 377.
- activity under neutralized conditions, (29) 877.
- as affected by mechanical action, (26) 80.
- as affected by stables, (30) 676.
- as affected by temperature, (35) 777.
- counting, (29) 206; (31) 78; (36) 476; (39) 76, 383.
- description, (34) 776.
- determination in, (29) 75; (31) 507; (33) 767, 876; (34) 271, 612; (38) 615.
- growth at different temperatures, (26) 880.
- heat resistance, (39) 78.
- in relation to flavor and odor, (35) 777.
- metabolism of, (31) 873.
- nonspore-forming, (36) 474.
- protease production, (39) 281.
- reducing power of, (28) 473.
- reductase test for, (31) 209.
- significance, (34) 672.
- sources, (38) 880.
- spore-bearing, studies, (35) 378.
- studies, (29) 173.
- useful and harmful, (33) 78.

bacterial—

- action on, (39) 882.
- contamination, (28) 276; (32) 577; (33) 876; (38) 578.
- content, (26) 274, 315; (27) 281; (28) 372; (29) 75, 279; (30) 877; (39) 179.

bacterial content as affected by—

- clarification, (39) 484.
- factors at barn, (37) 684.
- feeding stuffs, (30) 573.
- gargery and high count cows, (37) 874.
- stable air, (34) 183, 473.
- utensils, (38) 878.

bacterial—

- content, determination, (26) 315; (29) 717; (31) 507.
- content, factors affecting, (29) 878.
- count, (40) 673.
- count v. sediment or dirt test, (35) 676.
- counts, stating results of, (26) 577.
- hemolysin in, (39) 580.

Milk—Continued.

bacteriological—

- analysis, (35) 525; (36) 273, 775, 875.
- analysis, error in, (33) 767.
- analysis, methods, (36) 573, 574.
- examination, (28) 275; (31) 574, 873; (37) 468; (38) 74, 377, 579, 615.
- index for dirt in, (31) 574.

bacteriology, handbook, (30) 378.

bacteriology of, (26) 174; (28) 372; (29) 775; (33) 577, 701; (38) 781.

beverages, manufacture, (30) 378.

bibliography, (28) 373.

biological—

- analysis, treatise, (32) 312.
- examination, (29) 172.
- properties of, (30) 859.
- biology, (32) 854.
- biorization, (32) 473; (34) 875; (35) 677.
- biorization v. pasteurization, (34) 572.
- biorizator, description, (35) 677.
- biorized, notes, (32) 77, 269.
- bitter and rancid, studies, (37) 273.
- blue, bacteriology of, (32) 775.
- blue, cause of, (31) 374.
- board of Massachusetts State Department of Health, report, (37) 372.

boiled—

- and unboiled, effect on intestinal flora, (40) 867.
- detection, (26) 711, 712; (27) 13, 311; (28) 611; (32) 413.
- for infants, (30) 760; (32) 857; (36) 264.
- for young animals, (30) 760.
- nutritive value, (34) 659.
- serological action, (35) 382.
- v. raw, studies, (29) 360.

boiling, (34) 572.

boron in, (30) 168.

bottle filler as source of bacteria, (35) 880.

bottled, cooling, (36) 573.

bottled, pasteurizing, (35) 677.

bottled, regulation, (27) 178.

bottles—

- as source of bacteria, (33) 876; (38) 879.
- paper v. glass, (27) 777.
- relation to typhoid fever, (28) 579.
- sterilization, (27) 282.
- washing costs, (33) 876.
- washing trials, (33) 382.

buffalo, analysis, (28) 274; (29) 278.

by-products, utilization, (26) 779.

calcium content as factor in coagulation, (33) 674.

calculation of added water in, (40) 412.

calculation of nutritive value from routine tests, (40) 576.

caloric estimation of percentage-mixtures, (27) 664.

canning industry in United States, (32) 210.

cans, aluminum, use, (31) 375.

cans as source of bacteria, (38) 878.

cans, jacketing, (31) 771.

cans, notes, (32) 590.

cans, ordinary v. insulated, (32) 270.

cans, tests, (38) 679.

capillary and absorption phenomena, (26) 711.

capillary phenomena, (28) 807.

carabao's, analyses, (30) 669, 761.

carabao's, composition, (31) 374.

care and handling, (35) 99.

care in hot weather, (27) 767.

care of, (28) 75, 371, 694.

care on the farm, (29) 71; (32) 473.

cart, description, (28) 176.

caseification in presence of iodids, (28) 609.

casein—see also Casein.

and fat contents, relation, (32) 270.

fat test for, (31) 674.

isoelectric point of, (31) 175.

lysin content, (41) 559.

mineral elements in, (30) 611.

tryptic and peptic cleavage, (26) 565.

catalase—

- activity, (27) 109; (35) 10.
- and reductase determination in, (33) 414.
- in, (28) 611.
- investigations, (26) 112.
- cell content, (26) 370; (30) 677; (31) 372.
- cellular elements in, (29) 278; (33) 175.
- certification, (26) 371.

Milk—Continued.

- certified—
 - abortion bacillus in, (37) 881.
 - cost of production, (34) 380.
 - improvement, (34) 271.
 - production, (29) 878; (30) 474; (36) 572.
 - production and distribution, (28) 277.
- champagne, preparation, (29) 475.
- changes in, (35) 777.
- changes in at low temperature, (27) 460; (31) 373, 659.
- chemical and bacteriological standards, (27) 281.
- chemistry and physical constants, (26) 477.
- chemistry of, (26) 775; (28) 372; (32) 606.
- chemistry, practicum, (31) 413.
- chemistry, progress in, (28) 112; (29) 805; (30) 207, 313; (33) 673.
- chlorin content, (27) 715; (28) 314.
- chloroformic coagulation of, (32) 472.
- chocolate—
 - analyses, (26) 506.
 - determination of lactose and sucrose in, (40) 14.
 - methods of analysis, (27) 498, 613; (29) 799.
- cholesterol in, (26) 775; (40) 11.
- citric acid content as affected by heat, (39) 502.
- clarification, (32) 873; (34) 271; (35) 778; (37) 475; (38) 75; (40) 675, 775.
- clarifier as source of bacteria, (38) 880.
- clarifier slime, analyses, (37) 476.
- clarifiers, studies, (36) 274.
- clarifying, (39) 484.
- classification at New York, (27) 678.
- classimeter, description, (36) 875.
- clean, production, (31) 771.
- clotting investigations, (32) 174.
- coagulability and digestibility, (34) 611.
- coagulation, (34) 380; (36) 610.
- coagulation as affected by—
 - chlorin and bromin, (28) 504.
 - fat content, (31) 873.
 - salts of gold group, (27) 109.
 - treatment, (28) 878.
- coagulation—
 - by alcohol, (33) 113.
 - proteolytic ferments, (28) 112.
 - rennet, (28) 372; (29) 775; (32) 503.
 - sodium nucleinate, (33) 177.
 - in the stomach, (29) 360.
 - studies, (30) 311, 312; (33) 674.
- colloid chemistry, (27) 500.
- colon count, (40) 376.
- coloration of reagents by, (29) 412.
- colostrum, *see* Colostrum.
- commissions, medical, in United States and Canada, (36) 572.
- commissions, work against tuberculosis, (38) 381.
- composition, (26) 80, 880; (27) 506; (28) 176, 274, 374; (29) 775; (31) 505; (32) 412, 607; (33) 279.
- composition and characteristics, (34) 380.
- composition as affected by—
 - calcium phosphate in rations, (34) 270.
 - drugs, (30) 678.
 - feeding stuffs, (26) 273, 673, 879; (27) 677; (29) 277, 374, 776.
 - ingestion of placenta, (37) 873.
 - protein, (26) 79.
 - stage of lactation, (37) 373.
 - water in the ration, (35) 275.
- composition—
 - as drawn by the calf, (26) 673.
 - at different stages of milking, (29) 374.
 - diurnal variation in, (29) 375.
 - factors affecting, (28) 372; (30) 178; (33) 274; (38) 682.
 - variations in, (29) 673; (32) 369; (33) 174; (35) 275.
- condemned, utilization, (30) 378.
- condensed—
 - acidity, (39) 415.
 - analyses, (26) 171, 776; (29) 674, 880; (30) 178, 475, 669; (33) 277; (35) 176; (40) 379.
 - and evaporated, in United States, (38) 866.
 - and soy bean flour for infants, (27) 664; (35) 556.
 - bacteria in, (29) 777; (31) 375; (32) 873.
 - composition and nutritive value, (31) 772.
 - cytology and bacteriology, (31) 771.

Milk—Continued.

- condensed—continued.
 - determination of fat content, (27) 497; (33) 16.
 - for infants, (36) 558.
 - imports into Peru, (27) 469.
 - in Bermuda, (36) 275.
 - in tropical climates, (32) 675.
 - industry in United States, (30) 777, 791.
 - manufacture, (33) 504.
 - manufacture and importance, (29) 476.
 - methods of analysis, (31) 114; (33) 176.
 - nutritive value, (31) 161.
 - remade milk from, (40) 803.
 - sanitary studies, (35) 366.
 - sediment in, (34) 503.
 - standards, (26) 80; (29) 777.
 - studies, (26) 80.
 - sweetened, (40) 555.
 - treatise, (31) 375; (40) 283.
 - vegetable, notes, (26) 809.
- condensing factories in Norway, (29) 897.
- constituents, new, (38) 611.
- constituents, soluble, constancy of, (26) 507.
- constituents, utilization, (30) 378.
- consumption in New York City, 1918, (39) 67.
- contamination, elimination, (34) 185.
- contamination, sources of, (26) 171.
- contests, (28) 176; (34) 874.
- contests, educational value, (26) 478.
- contests in Michigan, (39) 383.
- contests, rôle in improving milk supply, (40) 575.
- control in stores, (29) 776.
- control stations in Norway, (30) 194.
- control unions in Denmark, (29) 278.
- coolers, tests, (30) 272.
- cooling, (35) 175; (40) 475, 675.
- cooling apparatus, description, (30) 789.
- cooling box, notes, (32) 590.
- cooling on the farm, (36) 573; (39) 679.
- cost of delivery, (38) 683.
- cost of distribution, (38) 177; (39) 182.
- cost of pasteurizing, (31) 188.
- cost of production, (26) 274, 299, 474; (27) 878; (28) 673, 796; (29) 278, 673, 876; (30) 377; (31) 573; (32) 368, 471; (33) 78, 276, 694; (34) 299, 380, 771; (35) 674, 872; (36) 271, 376, 473, 872, 873; (37) 474, 575; (38) 279, 478, 778, 894; (39) 382, 676, 677, 782, 784; (40) 282, 375, 376, 474, 878.
- cost of production—
 - and prices, (40) 281.
 - in Austria, (28) 594.
 - Canada, (27) 676.
 - Connecticut, (37) 776.
 - France, (27) 473.
 - Hungary, (27) 676.
 - Italy, (28) 775.
 - relation to size of cows, (34) 773.
 - relation to size of dairies, (38) 777.
- creaming ability, (36) 76.
- creaming as affected by heating, (36) 674.
- créatin and creatinin content, (31) 760.
- cryoscopic examination, (26) 211, 410.
- cultures, litmus substitute for, (37) 686.
- curd as an index of food value, (32) 558.
- curd, determination of elasticity, (36) 610.
- curdling as affected by pasture soils, (30) 573.
- curdling in stormy weather, (28) 372; (32) 873.
- daily per capita consumption, (39) 282.
- dealers, organization in New York, (28) 776.
- decalcified, for infants, (40) 661.
- decomposition, detecting degree of, (26) 112.
- decomposition, determination, (28) 314.
- decomposition products, (26) 775.
- defects, notes, (27) 474.
- delivery, waste in, (33) 675.
- deposit from in centrifuge, (34) 271.
- desicated—
 - analyses and standards, (39) 716.
 - composition, (28) 113.
 - manufacture, (30) 476.
 - manufacture and importance, (29) 476.
 - methods of analysis, (28) 113; (37) 503.
 - treatise, (29) 777.
- destruction of citric acid in, (36) 415.
- detection in pastry, (40) 612.
- determination of—
 - casein in, (39) 206.

Milk—Continued.

determination of—continued.

- degree of homogenization, (34) 612.
- dirt in, (26) 507; (27) 810; (28) 808; (30) 875, 876.
- dry matter in, (30) 710.
- fat-free solids in, (30) 314.
- freezing point, (33) 414.
- freshness, (36) 475, 507.
- manure in, (34) 272; (39) 882.
- phosphorus in, (27) 208.
- quality, (31) 674; (38) 74.
- specific gravity, (26) 610.
- total solids in, (26) 806; (27) 715; (33) 112.
- development of bacilli in, (30) 574.
- diabetic, analyses, (26) 171.
- differentiation of streptococci in, (27) 177.
- diffusible phosphorus of, (34) 271.
- digestibility, (32) 768.
- digestibility, and means of increasing it, (33) 460.
- digestibility as affected by fat, (33) 663.
- digestion, (26) 662; (27) 168; (36) 559.
- distributing plants, wastes in, (28) 373.
- distribution, (40) 280.
- distribution—
 - hygienic system, (28) 176.
 - in Boston, (39) 676.
 - Chicago, (39) 282.
 - cities, (28) 675.
 - Minneapolis and St. Paul, (33) 492.
 - of phosphoric acid in, (26) 610.
 - priority scheme in England, (38) 265.
 - relation to public health, (32) 76.
- distributors, cost accounting for, (38) 392.
- dried—
 - analyses, (30) 669; (38) 804; (40) 379.
 - analyses and bacterial content, (28) 278.
 - analyses and use, (28) 359.
 - as food for infants, (32) 760.
 - as substitute for whole milk, (34) 459.
 - bacterial content, (32) 873.
 - effect on bread, (28) 459.
 - methods of analysis, (33) 505.
 - testing, (29) 876.
- educational scoring, report, (40) 673.
- effect of X-rays on fermentation, (27) 231.
- effect on—
 - calcium and magnesium metabolism, (39) 876.
 - gastric secretion, (26) 466.
 - intestinal flora, (33) 460; (36) 664, 665.
 - mortality and growth, (33) 460.
 - reduction of nitrates by aldehyde, (26) 507.
 - streptococci, (28) 580.
- Egyptian buffalo, analyses, (35) 276.
- electrical conductivity, (26) 314; (27) 677; (33) 203.
- emulsion, for calves, (29) 369.
- enzym action in, (29) 775; (32) 299.
- enzym content as affected by diseases, (28) 885.
- enzymes, filtering, (39) 713.
- enzymes in, (32) 411; (38) 479.
- errors in testing, (26) 371.
- evaporated—
 - analyses, (33) 277.
 - coagulation, (34) 78.
 - determination of fat in, (27) 497; (37) 507.
 - determination of solids in, (30) 509; (37) 508.
 - fishiness in, (37) 686.
 - for infants, (36) 558.
 - methods of analysis, (31) 115.
 - tcsts, (35) 176.
- evening and morning, dirt content, (26) 574.
- ewe's, analyses, (26) 275.
- ewe's, butter from, (26) 275.
- examination, (26) 507, 575; (27) 411, 506; (34) 76; (38) 486.
- examination—
 - errors in, (26) 210.
 - for *Bacillus sporogenes*, (33) 875.
 - handbook, (40) 376.
- excretion of tubercle bacilli into, (26) 777, 884; (29) 583.
- expansion of, (32) 471.
- factors affecting gravity filtration, (30) 876.
- farinaceous, definition and analyses, (34) 365.
- fat—*see also* Fat.
 - analytical standards for, (26) 712.
 - and butter, differences between, (38) 280.
 - and lard, comparative value for growth, (36) 160.

Milk—Continued.

fat as affected by—

- acetic acid, (34) 567.
 - age of cow, (38) 578.
 - cottonseed oil feeding, (35) 775.
 - cottonseed products, (37) 72.
 - parturition, (37) 172.
 - Penicillium roqueforti*, (31) 107.
 - plane of nutrition of cow, (35) 774; (36) 669.
 - temperature, (29) 580; (37) 373.
- fat—
- as growth stimulant for young animals, (34) 561.
 - as measure of value of milk, (34) 671.
 - buffalo, analyses, (37) 272.
 - changes in composition, (39) 280.
 - changes in during lactation, (37) 373.
 - changes in during storage, (36) 773.
 - composition as affected by feeding stuffs, (26) 170.
 - composition as affected by sugar beets, (33) 674.
 - composition, variation in, (30) 272, 273.
 - computer for, (33) 475.
 - constants, investigations, (26) 806.
 - content and yield, correlation, (39) 579.
- fat content as affected by—
- feeding stuffs, (28) 175.
 - guinea grass, (30) 678.
 - method of milking, (29) 773.
 - milking machines, (29) 774.
 - work, (30) 475.
- fat content—
- at various stages of milking, (32) 75.
 - calculating, (39) 612.
 - daily changes in, (30) 474.
 - factors affecting, (27) 677.
 - improvement by breeding, (30) 376.
 - increasing, (30) 574; (31) 673.
 - relation to digestibility, (33) 163.
 - variations in, (39) 483; (40) 300.
- fat—
- cost of production, (38) 478.
 - detection of foreign fats in, (39) 715.
 - determination, (26) 169; (27) 113, 497; (28) 808; (33) 16; (39) 313.
- fat, determination—
- in margarin, (36) 715.
 - of fatty acids in, (39) 15.
 - of hardness, (32) 413.
 - of moisture content, (31) 508.
- fat—
- digestibility, (36) 861.
 - effect on growth, (30) 560.
 - ewe's, fatty acids in, (38) 12.
 - factors in, (32) 368.
 - fatty acids in, (31) 175; (38) 12.
- fat globules—
- as affected by temperature, (34) 570.
 - casings of, (29) 806.
 - membranes of, (26) 171.
 - relation to churning, (26) 477.
 - studies, (29) 579.
- fat—
- glycerids of, (31) 804; (40) 608.
 - human, composition, (27) 506.
 - isolation of growth-stimulating substances in, (32) 360.
 - judging, (26) 713.
 - losses in creameries, (40) 377.
 - low molecular glycerids of, (33) 803.
 - nitrogen and phosphorus in, (33) 564.
 - oxidation, (39) 786.
 - percentage, inheritance of, (31) 372; (40) 74.
 - physical and chemical constants, (28) 878.
 - pigments, investigations, (32) 18.
 - pigments, relation to plant pigments, (31) 273.
 - production and income, (39) 483.
 - production as affected by oestrum, (39) 882.
 - production, estimating, (39) 77.
 - production, relation to age, (39) 381.
 - rancidity, (39) 485.
 - Reichert-Meißl number, determination, (40) 412.
 - relation to solids-not-fat, (37) 113.
 - secretion, studies, (38) 779.
 - separation from nonfatty material, (35) 805.
 - separation of fat-soluble A from, (37) 308.
 - 7-day test, reliability, (34) 472.
 - specific heat, (32) 715.

Milk—Continued.

fat—continued.

- testing for, (39) 182.
- variation in, (30) 875; (31) 871, 872; (32) 174; (36) 571.
- variations due to time of milking, (34) 670.
- viscosity, (31) 209.
- vitamin content, (39) 770.
- yield, relation to body weight, (29) 374.
- feeding, bibliography, (31) 174.
- fermentation of citric acid in, (26) 112.
- fermented—
 - in infant feeding, (35) 470.
 - notes, (27) 880; (32) 662; (40) 379.
 - preparation, (39) 486.
 - preparation and use, (27) 75.
 - products, composition, (36) 674.
 - studies, (34) 474.
- fermenting power, (31) 413.
- ferments, lipolytic, studies, (32) 20.
- fever—
 - etiology and pathology, (26) 380.
 - pathology, (34) 184.
 - studies, (27) 185.
 - treatment, (26) 285, 380, 580.
- first and last drawn, composition, (29) 474; (30) 178.
- flavors and odors in relation to chlorin content, (38) 112.
- flow as affected by diuresis, (34) 570.
- flow, factors affecting, (36) 670.
- flow, relation to fat content, (31) 174.
- food value, (29) 564; (31) 656; (39) 282.
- for calves, (29) 771.
- chickens, (32) 264; (39) 376.
- growing chicks, (37) 768.
- infant feeding, composition, (35) 165.
- infants, (26) 171; (36) 558.
- infants, analyses, (30) 669.
- infants and invalids, (39) 883.
- infants, calcium content, (40) 661, 869.
- infants in Saxony, (31) 573; (32) 873.
- young animals, (31) 174.
- formaldehyde in, detection, (40) 413.
- fox's, analyses, (38) 577.
- freezing point, (27) 677; (30) 113; (32) 412; (33) 203, 414, 504.
- fresh, detection, (30) 777.
- freshly drawn, bacteria in, (35) 674.
- freshly drawn, specific weight, (30) 272.
- from cows affected with streptococcic mastitis, (29) 206.
 - cows infected with contagious abortion, (32) 677; (33) 774.
 - cows of fresh lactation, detection, (29) 477; (30) 180, 475; (32) 674.
 - different breeds, protein reactions, (32) 558.
 - different quarters of udder, (31) 873; (34) 270.
 - diseased animals, detection, (29) 480.
 - diseased udders, studies, (27) 287, 878.
 - Fargo restaurants, (39) 68.
 - foot-and-mouth diseased cows, (27) 379, 577; (28) 679; (30) 475, 573; (32) 76.
 - heifers and cows, fat content, (34) 472.
 - individual cows, variations in, (28) 579.
 - pasture-fed cows, (32) 870.
 - sick cows, analyses, (32) 577.
 - sick cows, composition and characteristics, (35) 275.
 - slop-fed cows, danger of, (26) 370.
 - tuberculous goats, danger, (27) 683.
 - vaccinated cows, tubercle bacilli in (29) 583.
- froth dispeller, description, (27) 474.
- frozen, analyses, (34) 473.
- frozen, chemical and physical constants, (27) 473.
- frozen, investigations, (28) 775, 776.
- gas formation in, (35) 676.
- gas-forming bacteria in, (26) 576.
- germicide effect of lactic acid in, (33) 460.
- glands, anatomy of, (30) 178.
- goat's—
 - analyses, (30) 575, 669, 777; (38) 780.
 - and its use, (32) 873.
 - composition, (29) 376; (31) 374; (34) 708; (37) 575; (40) 775.
 - composition and examination, (27) 506.
 - composition and uses, (38) 177.
 - composition as affected by stabling, (28) 581.

Milk—Continued.

goat's—continued.

- cost of production, (36) 173.
- detection in cow's milk, (33) 504.
- for infant feeding, (37) 570, 575.
- for tuberculosis patients, (35) 166.
- iron content, (27) 677.
- production of, (36) 173; (37) 575.
- secretion as affected by pituitrin injection, (39) 678.
- v. cow's, for infants, (32) 66.
- yields, (30) 572.
- grading, (35) 677; (36) 176, 274, 874; (38) 479.
- grading in small cities, (36) 474.
- growth of *Bacterium lactis acidii* in, (32) 76.
- growth of streptococci in, (32) 174.
- handbook, (26) 779.
- handling and delivering, (30) 877.
- handling and delivering, losses in, (32) 370.
- handling in pint bottles, (32) 575.
- haptines in, (26) 374.
- heat production in during souring, (26) 872.
- heated—
 - bacterial content, (32) 268.
 - detection, (26) 212, 712; (27) 498, 506, 507; (29) 612, 806.
 - dietetics, (36) 877.
 - digestibility, (29) 662.
 - loss of nutritive efficiency, (34) 368.
- hemolytic streptococci in, (35) 680; (40) 478.
- hexose sugar in, (33) 311.
- high v. low testing, for cheese making, (34) 473.
- high-grade, difficulties in making, (33) 473.
- homogenization, (36) 275.
- homogenized—
 - cheese from, (31) 875.
 - digestibility, (32) 768.
 - for infants, (36) 558.
 - studies, 31, 475.
- homogenizing experiments, (29) 879.
- hot-bottled, cooling by forced air, (36) 174.
- hot, bottling, (33) 382.
- hot pasteurized, bottling, (31) 275.
- houses, construction, (34) 789; (36) 390, 788; (37) 591.
- houses for prairie farms, (35) 689.
- human—
 - analyses, (26) 80, 711; (30) 665, 669; (31) 258; (35) 316, 557.
 - and bovine, differentiation, (26) 507; (31) 674; (32) 20.
 - antibody content, (29) 778.
 - artificial substitute for, (34) 558.
 - as affected by cooking, (29) 160; (31) 505.
 - as affected by gestation, (39) 280.
 - casein of, (39) 668.
 - chemistry of, (34) 461.
 - cholesterol in, (40) 11.
 - complement of, (26) 370.
 - composition, (27) 363; (33) 660; (37) 273; (40) 775.
 - composition and analyses, (33) 65.
 - examination, (28) 878.
 - fat content, (29) 278.
 - fat pigments of, (31) 275.
 - green color in, (34) 863.
 - hemagglutinins in, (29) 175.
 - iron content, (32) 472.
 - lactose content, (39) 315.
 - nonprotein nitrogen in, determination, (40) 509.
 - peptid-splitting enzyme in, (26) 803.
 - peroxidase of, (26) 410.
 - protective power against beriberi, (31) 858.
 - protein content, (31) 413.
 - reaction of, (40) 268.
 - viscosimetric studies, (27) 811.
- hydrogen peroxid in, (35) 11.
- hygiene—
 - bibliography, (31) 174.
 - for veterinarians, treatise, (30) 276.
 - notes, (30) 473.
 - principles and practice, (38) 280.
 - review of investigations, (32) 76.
 - textbook, (31) 676.
 - treatise, (29) 877.
- immunized, use against typhoid fever, (34) 272.
- industrial treatments, (40) 415.
- industry, history, (40) 879.
- industry in Wisconsin, (30) 679.
- infection by pathogenic bacteria, (35) 264.

Milk—Continued.

- infection in the home, (26) 673.
- infection with *Bacterium synchyneum*, (26) 87.
- infectious diseases of, (29) 473.
- inspection—
 - administrative side, (28) 276.
 - cost, (31) 79.
 - discussion, (27) 678; (33) 701.
 - in Canada, (26) 157.
 - Dorpat, Russia, (28) 178.
 - Germany, (28) 736.
 - Glasgow, (28) 178.
 - Kentucky, (28) 65; (34) 775.
 - Louisiana, (27) 375.
 - North Dakota, (28) 661, 675.
 - Oregon, (32) 778.
 - use of score card in, (26) 274.
 - weaknesses of, (29) 580.
- inspectors, appointment and compensation, (36) 774.
- iron content, (27) 411, 412; (28) 611, 808; (32) 370, 472; (33) 875.
- judging, (26) 774; (27) 810; (29) 206; (32) 413; (33) 577; (34) 12 113; (39) 111.
- judging, biological method, (31) 506; (36) 475, 507.
- judging by score cards, (27) 74.
- keeping quality during transportation, (34) 672.
- labeling, (36) 176.
- lactic fermentation test, (36) 476.
- lactose content, (39) 315.
- law in Michigan, (30) 74.
- law in New Jersey, (35) 873.
- law in Pennsylvania, (27) 767.
- laws and regulations in—
 - Germany, (28) 776.
 - Nebraska, (30) 679.
 - United States, (33) 874.
- legislation in United Kingdom, (26) 478.
- leucocyte test for, (31) 209.
- leucocytes in, (33) 382.
- machine and hand-drawn, bacterial content, (27) 574; (32) 470.
- machine drawn, bacterial content, (31) 475; (32) 673; (35) 776.
- malted, microanalysis, (40) 509.
- manual, (32) 660.
- market—
 - contests, (36) 375, 774.
 - enzymes in, (26) 313.
 - high bacterial counts, (36) 274.
 - inspection, (31) 175.
 - investigations, (28) 473.
 - legal standards, (26) 478.
 - of Iowa, (35) 572.
 - prices in United States, (30) 377.
 - standardization, (39) 883.
- marketing, (32) 874; (38) 683; (39) 182.
- marketing in Florida, (39) 282.
- marketing in New York, (38) 293.
- mastitis, hemolytic action, (27) 782.
- medicated, preparation and use, (31) 258.
- medium, synthetic, preparation, (27) 74.
- methods of analysis, (26) 112, 171, 212, 805; (28) 276, 314; (29) 278, 809; (31) 114; (33) 258, 613; (34) 713; (35) 316; (39) 14; (40) 376, 476.
- methods of examination, (29) 611; (36) 571.
- methods of examination, treatise, (26) 111.
- methods of sampling, (26) 313.
- methylene blue reduction, relation to oxygen concentration, (40) 613.
- microorganisms in, (31) 373.
- microscopic examination, (39) 76, 383, 384.
- mineral constituents, (29) 366; (38) 804.
- mixtures, calculation card, (40) 377.
- modified, coagulation in the stomach, (29) 360.
- modified, preparation, (30) 669.
- modifying for infant feeding, (33) 163.
- mold, action on phenylaminoacetic acid, (33) 503.
- neutralization precipitate, (36) 299.
- nitrogenous constituents, bacterial action on, (39) 882.
- nonlactose fermenters in, (32) 472.
- nonprotein nitrogenous constituents, determination, (40) 509.
- nontuberculous, in Guernsey, (27) 83.
- nutritive value, (34) 164.

Milk—Continued.

- of carabaos, analyses, (39) 785.
- cows and Indian buffaloes, nutritive value, (26) 574.
- cows in heat, (30) 475.
- pathologic origin, detection, (26) 610.
- Porto Rican cows, analyses, (30) 678.
- tuberculous women, tubercle bacilli in, (27) 480.
- various animals, composition, (40) 775.
- old, detection, (27) 498.
- onion flavor in, (37) 683; (39) 381.
- ordnance, guide for formulating, (38) 177.
- organisms, yellow, studies, (34) 77.
- origin of sulphocyanogen in, (26) 477.
- osmotic pressure, (27) 677.
- oxygenation, (37) 174.
- ozonization of, (31) 175.
- pail, description, (28) 277; (34) 571.
- pails, small-top, (39) 179.
- pails, tests, (30) 375.
- paracasein, tryptic and peptic cleavage, (26) 565.
- pasteurization, (26) 275, 282, 283, 577; (27) 178, 281, 678; (28) 873; (29) 73, 109, 675; (31) 276; (32) 268; (33) 577; (34) 571, 572; (35) 99; (36) 474, 674; (39) 78, 888; (40) 675, 776.
- pasteurization—
 - at low temperature, (37) 777.
 - compulsory, (36) 675; (39) 182.
 - experiments, (35) 482.
 - handbook, (36) 274.
 - in bottles, (31) 275; (32) 575, 576; (33) 382; (36) 174.
 - in Denmark, (34) 874.
 - investigations, (35) 276.
- pasteurized—
 - and raw, differentiation, (37) 415.
 - and raw, multiplication of bacteria in, (36) 475.
 - and sterilized, calcium absorption from, (27) 168.
 - bacterial activity in, (37) 874.
 - control of temperature, (28) 775.
 - detection, (28) 113; (30) 776.
 - for cheese making, (28) 581, 675; (29) 475, 674; (31) 874; (33) 175, 382; (35) 573; (39) 282, 582; (40) 80.
 - for infants, (31) 460; (40) 364.
 - for young animals, (29) 287.
 - in bottles, silicic acid content, (33) 675.
 - loss of cream line on, (33) 79.
 - microscopic test, (34) 113; (36) 574.
 - resorption of lime from, (27) 282.
 - score card for, (35) 572.
- pathogenic bacteria in, (32) 473.
- pathological, detection, (26) 25, 212; (27) 13, 14, 411, 810, 811, 878; (28) 373, 680; (29) 612.
- pathological, in manufacture of cheese, (26) 676.
- payment for at cheese factories, (28) 278, 776; (30) 476; (36) 876; (37) 374.
- peroxidase, nature of, (30) 11.
- peroxidase, notes, (27) 803.
- peroxidase reactions, (32) 412.
- peroxidase test, studies, (29) 311.
- phosphatids in, (30) 312; (33) 660; (36) 862.
- physical and chemical constants, (28) 372.
- plants, hot water for, (28) 892.
- plants, sanitary surveys, (36) 774.
- plants, use of exhaust steam by, (38) 390.
- plants, use of fuel in, (40) 476.
- poisoning due to staphylococci in udder, (32) 872.
- powder—
 - analyses, (26) 171; (29) 476, 880.
 - as leavening agent, (33) 66.
 - characteristics and uses, (28) 675.
 - cold storage, (27) 461.
 - examination, (30) 664.
 - in northern Europe, (30) 177.
 - manufacture, (29) 475; (30) 778; (35) 678.
 - manufacture and use, (26) 81.
 - methods of analysis, (33) 176.
 - microscopic appearance, (37) 415.
 - preservation, (34) 474.
 - remade milk from, (40) 803.
 - starters in creameries, (28) 796.
 - studies and analyses, (40) 379.
 - treatise, (31) 375; (40) 283.

Milk—Continued.

- preparations, dried, examination, (30) 669.
- preservation, (26) 171; (32) 576; (33) 502, 503, 577.
- preservation by freezing, (33) 675.
- preservation of samples, (30) 13, 14.
- preservatives—
 - analyses and detection, (26) 806.
 - composition, (27) 811.
 - detection, (31) 811.
 - effect on Babcock test, (30) 576.
- preserved, food value, (32) 662.
- preserved with formalin for calves, (32) 669; (38) 377.
- price fixing, (40) 299.
- price in England, (38) 90.
- price in Germany, (28) 373.
- price in Vaud, Switzerland, (28) 489.
- price paid to farmers, (32) 674.
- prices, (27) 574.
- processing, studies, (40) 675.
- producers' and consumers' price, (40) 879.
- producers' convention in Washington, D. C., (35) 98, 275.
- product, fermented, manufacture, (31) 772.
- production, (26) 774.
- production—
 - and care, (32) 575.
 - conformation, correlation, (28) 878.
 - distribution, (28) 278; (40) 280.
 - handling, (29) 71; (40) 673.
 - inspection in Hawaii, (27) 877.
 - inspection in New England, (34) 380.
 - marketing in Delaware, Maryland, and Pennsylvania, (39) 677.
 - marketing in New England, (39) 676.
 - percentage of fat, correlation, (39) 579.
 - percentage of solids, hereditary factors, (40) 672.
- production, as affected by—
 - age at first calf, (40) 178.
 - age of cow, (27) 280; (32) 575; (33) 97; (38) 176; (39) 381.
 - age of sire, (26) 166.
 - cattle ticks, (32) 581, 681.
 - feeding stuffs, (26) 273; (27) 176.
 - oestrus, (34) 670; (39) 882.
 - palm nut cake, (26) 169.
 - sires, (35) 564, 570; (38) 176.
 - stage of lactation, (38) 683.
 - time of calving, (31) 770, 771.
- production—
 - changes in during lactation, (37) 373.
 - cost accounts, treatise, (36) 271.
 - during heat period, (40) 878.
 - evolution in, (28) 370.
 - factors affecting, (26) 774; (29) 577.
 - feed costs, (39) 482.
 - feeding experiments for, refined methods, (39) 380.
 - feeding for, (33) 673, 872.
 - feeding standards for, (28) 877.
 - human, as affected by protein in diet, (38) 167.
 - improvement, (29) 578, 673; (38) 476.
 - in California, (28) 371.
 - Germany, (31) 475.
 - Ireland, (27) 375.
 - Italy, (27) 472.
 - Norway, (29) 897.
 - United States, (34) 690; (40) 594.
 - winter, (26) 275.
- increasing, suggestions for, (39) 483.
- inheritance, (34) 671.
- inheritance in cattle, (28) 878; (40) 74.
- lecture on, (28) 271.
- mineral metabolism during, (40) 373.
- notes, (27) 74; (32) 574.
- nutrients required for, (30) 773; (38) 376.
- of Ayrshire cows, (29) 876.
- buffaloes, (28) 670.
- different breeds, (28) 272; (39) 579.
- half-bred zebu, (30) 74.
- Shorthorns, cost, (39) 182.
- proteins for, (31) 173; (33) 275; (36) 174, 671; (40) 572.
- production, relation to—
 - body weights, (28) 196; (29) 374.
 - conformation, (27) 675; (31) 573; (34) 379.

Milk—Continued.

- production, relation to—continued.
 - escheutchen, (29) 775; (34) 670.
 - form and weight, (29) 473.
 - glands of internal secretion, (37) 173, 272.
 - width of jaw in cattle, (28) 472.
- production—
 - review of literature, (26) 266.
 - studies, (28) 272, 774; (31) 670.
 - treatise, (26) 78.
 - variation in, (39) 380.
 - water requirements for, (40) 774.
- products—
 - analyses and use, (28) 359.
 - Asiatic, analyses, (27) 268.
 - decomposition by microorganisms, (28) 372.
 - determination of fat in, (37) 805.
 - food value, (29) 564; (31) 656.
 - for poultry, (39) 780.
 - inspection in Dorpat, Russia, (28) 178.
 - manual, (37) 777.
 - methods of analysis, (31) 114; (40) 507.
 - osmotic pressure, (28) 262.
 - pasteurization, (26) 282, 283.
 - pipettes for sampling, (36) 805.
 - specific heat, (32) 715.
 - testing, (33) 298.
 - treatise, (28) 176.
- protein—
 - as affected by lactic ferments, (33) 714.
 - composition and digestibility, (35) 165.
 - content, (31) 413.
 - digestibility as affected by rennin, (36) 559.
 - efficiency for growth, (33) 465; (35) 562.
 - efficiency for milk production, (33) 276.
 - preparation, (34) 461.
 - role in infant feeding, (35) 165.
- protein-free, (40) 463, 608.
- protein-free, preparation, (34) 557.
- protein-free, studies, (36) 865.
- proteins—
 - biologic differentiation, (31) 506.
 - of, (38) 505, 612.
 - physiochemical state, (40) 501.
 - serological action, (35) 382.
 - studies, (37) 8; (38) 505.
- purin content, (40) 205.
- quality, factors affecting, (33) 79.
- quality in relation to score cards, (33) 78, 382.
- quality, meaning of term, (38) 479; (39) 77.
- raw and boiled, differentiation, (31) 507.
- and heated, properties, (39) 883.
- and pasteurized, nutritive value, (31) 460.
- bactericidal effect, (36) 475.
- digestibility, (29) 662.
- for infants, (34) 659.
- nutritive value, (28) 775.
- pasteurized, and boiled, relative resistance to infection, (34) 272.
- reaction, (27) 13, 810; (29) 806, 807.
- reaction—
 - and calcium content as factors in coagulation, (34) 611.
 - as factor in coagulation, (33) 674.
 - Schardinger's, (28) 372; (31) 507.
- recipes, (29) 564.
- recording associations in Denmark, (32) 674.
- records—
 - analyses, (40) 872.
 - interpretation, (29) 775.
 - of American and Scotch Ayrshires, (37) 775.
 - of champion cows, (26) 476.
 - paper on, (27) 676.
 - registering in Argentina, (36) 673.
 - studies, (29) 577; (30) 572.
 - systems for in various countries, (29) 673.
- reducing properties, (28) 372, 412; (35) 203.
- reductase test, (32) 809; (39) 206.
- refractometry of, (26) 210.
- refrigeration, (31) 575.
- refrigeration, cost, (35) 175.
- refrigeration in transit, (33) 675.
- refrigerator, homemade, description, (26) 172.
- regulations—
 - in England and Wales, (27) 678.
 - New York City, (27) 678.
 - Prussia, (27) 575; (28) 373.
 - United States, (26) 575; (35) 800; (36) 874.
 - municipal, (36) 774.

Milk—Continued.

- reindeer, analyses, (30) 275, 476; (32) 577.
- relation between specific gravity and percentage of fat and total solids in, (33) 112.
- relation to—
 - bovine infectious abortion, (36) 480.
 - diseases, (28) 674.
 - health, (40) 866.
 - infantile scurvy and beriberi, (30) 861.
 - Malta fever, (36) 382.
 - public health, (30) 678.
 - scurvy, (27) 568.
 - scurvy in guinea pigs, (36) 363.
 - septic sore throat, (31) 174; (32) 269; (34) 473.
 - tonsillitis epidemics, (32) 577.
 - tuberculosis, (29) 499; (32) 472.
 - typhoid fever, (28) 258.
- remade, (40) 802.
- removal of garlic flavor from, (31) 771.
- removal of turnip flavor from, (26) 673.
- rennet inhibition test, (26) 610; (30) 681.
- resorcinol test, (39) 805.
- rooms, plans, (34) 487.
- ropy, notes, (26) 830; (28) 879; (34) 76, 776.
- rosolic acid test for, (33) 115.
- samples—
 - handbag refrigerator for, (26) 172.
 - homogenizing, (27) 614.
 - preservation, (27) 677.
 - preserved, counts from, (39) 580.
- sampling, (32) 672; (39) 77.
- sanitary—
 - control, (34) 77.
 - production, (26) 171; (28) 473, 674, 776; (29) 463, 473; (30) 877; (32) 175, 370, 472, 473, 775; (33) 473, 576, 765; (34) 184, 776, 794; (36) 572, 573; (37) 174; (38) 75, 280, 377, 478, 578, 781, 880; (39) 179.
 - production and handling, (27) 576.
 - relation to barns, (29) 500.
- Sardinian fermented, use, (35) 472.
- scales, use, (29) 71.
- scoring, (35) 176.
- secretion—*see also* Milk production.
- anatomy and physiology, (26) 775.
- secretion as affected by—
 - barley, (34) 269; (40) 878.
 - dipping, (27) 477.
 - diuresis, (32) 74.
 - extracts of organs, (30) 375.
 - pituitary extract, (30) 272; (31) 272; (32) 268, 871.
 - pituitrin, (34) 270.
 - protein, (26) 79.
- secretion—
 - by virgin doe kid, (38) 780.
 - during process of milking, (37) 172.
 - factors affecting, (26) 169.
 - lysin synthesis in, (40) 72.
 - physiology of, (32) 173; (36) 573; (39) 678, 679.
 - preparation for increasing, (26) 574.
 - relation to antituberculosis immunity, (26) 379.
 - review of investigations, (26) 274.
 - studies, (26) 79; (27) 375; (28) 175; (30) 178; (33) 203; (37) 272; (38) 779.
- sediment, examination, (31) 209.
- sediment test, (28) 277; (33) 577.
- sediment tester, holder for, (31) 875.
- separation as affected by agitation, (27) 574.
- separation at different periods of lactation, (31) 375.
- serological action, (35) 382.
- serum—
 - composition, (31) 505.
 - extraction of lactose from, (26) 276.
 - preparation, (29) 800, 806; (39) 805; (40) 11.
 - preparation and use, (28) 207.
 - refraction of, (29) 612; (33) 715.
 - specific gravity and refraction, (27) 677.
 - specific weight of, (33) 613.
- sheep's—
 - analyses, (30) 575.
 - composition, (32) 472.
 - factors affecting composition, (36) 273.
 - studies, (36) 569.
- show in Philadelphia, (26) 371.
- sickness—
 - notes, (37) 195, 690.
 - relation to white snakeroot, (40) 681.

Milk—Continued.

- sickness—continued.
 - studies, (37) 583; (39) 489.
 - transmission to man, (39) 685.
 - significance of colon bacilli in, (37) 874.
- silicic acid in, (27) 376.
- skimmed, *see* Skim milk.
- slime, examination, (30) 274.
- slime-making bacteria in, (29) 376.
- slimy and ropy, studies, (34) 776.
- so-called complement in, (33) 878.
- solids—
 - as affected by drying, (30) 13.
 - nonfatty, determination, (38) 314.
 - variations and secretion, (40) 672, 872.
 - variations in, (30) 875.
- sour—
 - destruction of *B. typhosus* in, (40) 476.
 - for chickens, (35) 773.
 - chicks, (34) 176, 881.
 - laying hens, (39) 577.
 - young calves, (33) 269.
 - studies, (39) 613.
 - use against blackhead in turkeys, (30) 587.
 - use against diarrhea in chicks, (29) 288; (31) 484.
- souring, (26) 776; (35) 616.
- souring—
 - chemical changes in, (34) 802.
 - relation to cockroaches, (26) 347.
 - under neutralized conditions, (29) 877.
- specific gravity, (27) 677; (34) 317.
- specific gravity, daily changes in, (30) 474.
- specific heat, (31) 573; (32) 715.
- spoiling and preservation, (26) 355.
- standards, (26) 275; (29) 777; (40) 864.
- standards—
 - and regulations, notes, (27) 678.
 - bacteriological, in United States, (31) 475.
 - discussion, (26) 275; (33) 702.
 - for determining purity, (33) 767.
 - in United States, (33) 874.
 - municipal, notes, (32) 871.
 - of American Public Health Association, (30) 273.
 - practicability, (31) 373.
 - report on, (36) 874.
 - studies, (26) 274.
- sterile, bacterial content, (32) 872.
- sterile, ferments in, (28) 411.
- sterilization, (29) 280; (33) 473; (34) 572.
- sterilization—
 - by electricity, (29) 580; (30) 776; (31) 175; (32) 77, 269; (33) 78; (35) 175, 378.
 - by ozone, (27) 75.
 - by ultraviolet rays, (28) 277, 373, 675; (32) 88.
 - Lobeck's biorisator process, (30) 776.
- sterilized—
 - analyses, (26) 776; (30) 669.
 - food value, (32) 662.
 - from tuberculous cows, (26) 477.
 - relation to rachitis and scurvy in infants, (34) 776.
 - utensils for, (39) 179.
- storage, (32) 356.
- stores, score card for, (29) 776.
- storing and shipping, (40) 475.
- straining, (40) 475.
- strawberry-like odor in, (26) 371.
- streptococci—
 - heat resistance, (39) 84.
 - in, (26) 777; (28) 580, 674; (38) 76.
 - origin, (30) 875.
 - studies, (26) 575; (27) 375.
- streptothrix in, (40) 184, 185.
- studies, (28) 579.
- substitutes for calves, (33) 669; (34) 667, 774; (36) 565, 567, 571.
- substitutes, notes, (29) 174, 668.
- sugar—
 - determination, (33) 203.
 - European methods of making, (28) 777.
 - examination, (26) 313; (27) 114.
 - importance in judging milk, (33) 577.
 - manufacture and use, (27) 114.
 - manufacture from whey, (26) 779.
 - manufacture in northern Europe, (30) 177.
 - rôle in judging milk, (34) 113.
 - test for, (33) 177.
 - toxicity toward dogs, (28) 462.

Milk—Continued.

- sulphur in, (31) 817.
- supply—
 - and public health, (40) 179.
 - bacteriological control, (32) 871.
 - city, improvement and regulation, (27) 281.
 - control, (26) 711; (28) 373; (29) 776; (36) 375.
 - control, enzym method, (29) 477.
 - improvement, (26) 275, 577; (27) 74, 376; (30) 473; (31) 275; (34) 575, 874; (36) 474; (37) 777; (38) 479.
 - in United States, (34) 874.
 - of Australia, (32) 399.
 - Baltimore, (28) 674.
 - Bangalore, (37) 175.
 - Bombay, (31) 475; (36) 573.
 - Boston, (30) 678.
 - Burlington, Vermont, (38) 478.
 - Chicago and Washington, (26) 81.
 - cities, (26) 574; (32) 76.
 - cities in Canada, (40) 879.
 - cities, inspection, (26) 575; (34) 184.
 - cities, regulation, (30) 678.
 - cities, treatise, (37) 174, 874.
 - Copenhagen, (27) 575.
 - Copenhagen and Stockholm, (30) 177.
 - District of Columbia, (26) 577; (27) 281.
 - Dublin, (40) 283.
 - Genoa, (27) 677.
 - India, (32) 76.
 - Ireland, (30) 679.
 - Kansas, (33) 577.
 - Karlsruhe, (30) 377.
 - large cities, sanitary, (39) 784.
 - London, (38) 280.
 - Madras, (39) 282.
 - Massachusetts, (30) 776; (37) 372.
 - Milwaukee, (29) 280.
 - Moscow, (30) 274.
 - New York City, (27) 879; (29) 473; (36) 474, 572; (37) 175; (38) 780.
 - New York State, (36) 572.
 - Paris, (36) 273, 572.
 - Paris in 1917, (40) 674.
 - Philadelphia, (38) 378.
 - Pittsburgh district, (38) 279.
 - Portland, Oregon, (40) 375.
 - Rochester, New York, (28) 675.
 - San Francisco, (28) 473.
 - small cities, improvement, (29) 473.
 - small town, controlling, (39) 580.
 - United States, safeguarding, (33) 701.
- supply, relation to—
 - sore throat epidemic, (27) 177; (28) 674; (33) 577; (37) 273.
 - tonsillitis outbreak, (26) 575.
 - tuberculosis, (26) 275; (28) 276; (30) 574.
 - typhoid fever, (26) 478; (27) 376; (38) 377.
- supply—
 - review of literature, (28) 473.
 - sanitary control, (36) 774.
 - treatise, (26) 478.
- surface tension in, (26) 171.
- sweet v. sour, for chicks, (33) 273.
- tables for blending, (33) 577.
- tablet reagents for, (26) 608.
- testing, (28) 371; (29) 876, 879; (30) 74, 875; (32) 874; (33) 112; (36) 674; (37) 618, 875; (39) 206.
- testing—
 - and grading, treatise, (26) 578.
 - and handling, (32) 774.
 - apparatus, notes, (27) 792.
 - apparatus, tests, (27) 113.
 - Babcock, *see* Babcock test.
 - errors in, (26) 674.
 - for cheese making, (27) 779.
 - handbook, (29) 206.
 - law, (28) 473.
 - methods, newer, utility, (26) 25.
 - systems in various countries, (29) 673.
 - treatise, (33) 298.
 - utensils, inspection, (30) 178.
- tests—
 - comparison, (29) 611, 717; (31) 674.
 - errors in, (31) 873.
 - pipette for, (36) 805.
- textbook, (31) 468.
- transmission of tuberculosis by, (30) 882; (37) 80.
- treatise, (26) 171; (28) 276, 373, 473, 674.
- trials in Great Britain, (27) 676.

Milk—Continued.

- tubercle bacilli in, (26) 281; (27) 878; (36) 278.
 - tuberculous, danger from, (27) 474.
 - udder bacteria in, (39) 383, 384.
 - ultrafiltration, (37) 207.
 - undescribed pathogenic bacterium in, (26) 87 (27) 576.
 - use by families having little children, (40) 863.
 - use of preservatives in, (27) 282.
 - utensils, (40) 674.
 - valuation, (30) 377, 574; (34) 671.
 - value in the diet, (29) 862; (36) 763; (39) 471; (40) 179, 280, 359.
 - variation in, (31) 373; (32) 75, 270, 674, 871; (34) 379.
 - variations in fat and solids-not-fat, (39) 483.
 - vegetable, digestibility and food value, (33) 163.
 - vegetable, production, (26) 613.
 - veins, relation to production in dairy animals, (38) 476.
 - veins, significance of, (36) 673.
 - vetch, toxicity, (37) 780.
 - viability of *Bacillus typhosus* in, (26) 776.
 - viscosity, determination, (33) 504.
 - vitamin fraction of, (30) 508.
 - volatile fatty acids in, (27) 113.
 - warm, danger for infants, (28) 259.
 - Washington market, spore-bearing bacteria in, (32) 269.
 - water-decomposing agent in, (38) 802.
 - watered, detection, (26) 210, 211, 314, 410; (27) 111, 506, 809; (28) 112; (29) 806; (30) 113, 414, 508; (31) 209; (32) 299, 370, 413; (33) 208, 504, 613, 715; (36) 571, 807; (37) 13, 804; (38) 11, 413.
 - watered, souring, (33) 616.
 - whely, yellow pigment of, (32) 19.
 - white color, (40) 802.
 - yield as affected by—
 - albuminous food, (28) 774.
 - frequency of milking, (32) 267.
 - milking machines, (28) 472; (29) 774.
 - rainfall, (28) 716.
 - work, (30) 475.
 - yield—
 - computing decrease in, (28) 472.
 - inheritance in cattle, (27) 375.
 - relation to escutcheon, (30) 473.
 - relation to phosphate depletion of soil, (38) 118.
 - yields, determination, (36) 673.
 - zymoscopic testing, (33) 175.
- Milking—**
- at unequal periods, (34) 379, 670.
 - Eichloff-Schumann method, (28) 277.
 - Heglund method, (32) 267.
 - machine, (40) 674.
 - machine v. hand, (26) 274.
 - machines—
 - as factor in dairy farming, (36) 272.
 - bacterial contamination of milk, by, (36) 177.
 - descriptions and use, (27) 792.
 - discussion, (27) 387.
 - effect on cell content of milk, (31) 372.
 - effect on yield of milk, (28) 472.
 - electricity for, (32) 886.
 - in production of sanitary milk, (38) 377.
 - motor driven, description, (27) 90.
 - notes, (27) 176; (30) 877; (32) 399.
 - relation to cattle diseases, (26) 673.
 - sterilization and efficiency, (29) 578.
 - tests, (26) 672; (27) 486; (29) 774; (30) 272, 573; (31) 475; (32) 266, 673; (33) 589, 765; (34) 183, 589; (35) 776; (36) 75, 673, 774; (37) 75; (38) 679.
 - use, (27) 473.
 - methods, (29) 373; (32) 75, 267; (34) 299; (36) 375.
 - tests, error in, (32) 75.
- Milkweed—**
- anthracnose, notes, (33) 350.
 - geographical distribution, (26) 335.
 - green, leaf variation in, (27) 741.
 - notes, (32) 778.
 - whorled, toxicity, (39) 787.
- Milk—**
- feed, analyses, (34) 668.
 - feed grinding and sifting, tests, (30) 292.
 - feed, mixed, analyses, (27) 170.

Millet—Continued.

- fumigants, effect on baking quality of flour, (26) 357.
- insects, destruction by heat, (29) 253.
- insects, life history and remedies, (30) 155.
- products, shipments and prices in Minneapolis, (32) 894.
- Millers, manual and record book for, (40) 863.
- Millet—
 - absorption of organic nitrogen by, (29) 628.
 - amylase, studies, (31) 609.
 - and Sudan grass, comparative yields, (40) 328.
 - as cover crop for orchards, (33) 240.
 - forage crop, (31) 829.
 - green manure, (28) 339.
 - midsummer forage crop, (39) 532.
 - silage crop, (39) 133.
 - source of sugar, (32) 117.
 - bran, analyses, (33) 170.
 - bread, digestibility, (37) 364.
 - breeding for drought resistance, (34) 528.
 - broom, classification, (33) 834.
 - broom corn, culture in Texas Panhandle, (29) 429.
 - bulrush, culture experiments, (32) 227.
 - bulrush, varieties, (30) 731.
 - caterpillar, notes, (33) 654.
 - chloroform extract of, (31) 71.
 - composition, (27) 668.
 - cost of production, (35) 691.
 - culture, (29) 426; (31) 35, 265; (34) 630.
 - culture—
 - and utilization, (37) 37.
 - experiments, (26) 422, 632, 737; (27) 532, 735; (28) 735; (29) 137; (30) 133, 136; (31) 733; (32) 227, 526, 529, 530; (33) 31, 633; (35) 529; (36) 32, 133, 829; (37) 227, 436, 730, 734, 824; (38) 334, 336, 433, 830, 831; (39) 227, 435.
 - experiments in India, (40) 332.
 - for chicken feed, (38) 827.
 - for hay, (37) 436.
 - in Dutch East Indies, (30) 697.
 - in eastern Oregon, (38) 432.
 - in Rhodesia, (27) 32, 637.
 - under dry farming, (30) 435; (36) 529; (37) 329.
 - depth of sowing tests, (27) 835.
 - digestibility, (27) 669; (37) 168.
 - ditch, analyses, (30) 565.
 - downy mildew, studies, (31) 51.
 - effect on following crop, (40) 623, 734.
 - effect on nitrate content of soils, (29) 818.
 - exhibits of, (31) 495.
 - fertilizer experiments, (26) 422, 523, 830; (28) 338, 816; (29) 625; (30) 823; (31) 733; (34) 330, 421; (35) 220, 426; (36) 427, 626; (37) 436; (38) 230, 433, 829; (39) 817; (40) 332.
 - fertilizer experiments with bat guanos, (39) 426.
 - flour, analyses, (39) 870.
 - for late planting, (37) 436.
 - glant, analyses, (26) 362.
 - grain, as a feeding stuff, (34) 565.
 - grass, analyses, (28) 463.
 - green manuring experiments, (37) 734.
 - growing with corn, (40) 822.
 - growth as affected by meteorology, (29) 510.
 - growth on partially sterilized soils, (35) 515.
 - growth studies, methods, (38) 526.
 - hay, ash analyses, (29) 861.
 - Hungarian, liming experiments, (39) 221.
 - hydrocyanic acid in, (33) 506.
 - improvement, (28) 736.
 - influence of meteorological factors on, (38) 15.
 - irrigation experiments, (33) 884; (40) 331.
 - Italian, notes, (30) 233.
 - Japanese—
 - analyses, (27) 68.
 - culture experiments, (35) 528.
 - fertilizer experiments, (26) 725.
 - maltase content, (31) 204.
 - milling experiments, (40) 556.
 - mineral constituents, digestibility, (40) 769.
 - notes, (26) 362.
 - pearl, culture in Porto Rico, (29) 631.
 - pearl, root parasites of, (31) 842.
 - Polish meal, methods of analysis, (29) 311.
 - production in Spain, (28) 736.
 - right- and left-handedness in, (27) 236.
 - rock phosphate for, (29) 418.
 - seed, inspection in Maryland, (36) 442.

Millet—Continued.

- seed protein, nutritive value, (39) 666.
- seed treatment, (39) 238, 353.
- seeding experiments, (27) 639; (32) 528; (40) 331.
- selection experiments, (37) 32.
- smut—
 - cause and treatment, (30) 47.
 - description and treatment, (39) 248.
 - notes, (31) 841; (32) 544; (35) 348.
 - studies, (39) 353.
 - treatment, (34) 50; (40) 48.
- starch, notes, (28) 408.
- Striga lutea on, (40) 43.
- transpiration in, (36) 226.
- varieties, (26) 233, 830; (27) 32, 334, 530, 532, 736; (28) 736; (30) 525, 731; (31) 36, 732, 733, 829; (32) 226, 528, 529; (33) 33, 527; (35) 229; (36) 36, 133, 529; (37) 32, 233, 329, 331, 436, 825; (38) 433, 630, 830.
- variety tests, (39) 128, 336, 434, 436; (40) 332, 522.
- water requirements, (29) 826; (32) 127; (34) 720; (38) 227.
- wild, as duck food, (30) 545.
- yields, (28) 533; (31) 226; (40) 733, 735.
- Millinery teaching in high schools, (36) 595.
- Milling—
 - and baking, handbook, (35) 859.
 - by-products, effect on baking quality of flour, (26) 356; (30) 555.
 - invisible loss in, (29) 661.
 - offals, digestion coefficients, (28) 170.
 - offals of wheat, composition, (33) 564.
 - products, composition, (26) 358.
- Millipedes—
 - destructive to vegetables, (26) 458.
 - hothouse, new genus, (26) 353.
 - remedies, (32) 246.
- Mills, fumigation, (29) 640.
- Milo—
 - and corn, transpiration, (39) 440.
 - as dry farm crop, (29) 736; (37) 329, 637; (39) 736.
 - as pasture crop for pigs, (38) 470.
 - as silage crops, (38) 174.
 - breeding experiments, (39) 736.
 - chemistry of, (40) 608.
 - chop, analyses, (26) 467; (28) 464; (34) 169, 467; (36) 765; (38) 369; (40) 571.
 - culture, (32) 226.
 - culture—
 - experiments, (27) 529; (28) 532; (29) 225; (32) 227, 526; (33) 32, 332, 830; (37) 132, 331, 730; (38) 631, 829, 831; (39) 129, 835; (40) 433.
 - in Arizona, (32) 226.
 - Kansas, (39) 33; (40) 331.
 - sand hills of Nebraska, (35) 827.
 - Texas, (29) 429; (32) 332; (35) 440; (39) 533, 835.
 - digestibility and productive value, (37) 865.
 - drought resistance of, (28) 633.
 - dwarf, digestibility, (36) 661.
 - fats and fatty acids of, (38) 410.
 - feeding value, (39) 71.
 - fertilizer experiments, (29) 32; (33) 830.
 - for pigs, (29) 468; (39) 174.
 - grades, (32) 138.
 - hogging-off, (40) 472.
 - improvement, (40) 737.
 - irrigation experiments, (27) 529; (40) 330.
 - leaves, variation of water and dry matter in, (37) 637.
 - maize, see Milo.
 - meal, analyses, (36) 765.
 - meal, digestibility, (36) 470.
 - notes, (26) 362; (31) 333.
 - recurring, (37) 642.
 - relation to polyneuritis, (39) 369.
 - seeding experiments, (33) 38.
 - spacing experiments, (32) 332; (34) 229.
 - starch content, (35) 108.
 - stover yields, (40) 330.
 - thinning experiments, (33) 38.
 - use in bread making, (34) 67.
 - varieties, (37) 338.
 - varieties for central and southern Great Plains, (35) 832.
 - varieties for Texas, (39) 835, 838.
 - water requirement, (32) 335; (35) 825; (38) 229.
 - weight ratios, (36) 131.
 - wilting coefficient, (32) 335.
 - yields, (29) 32, 426.

- Milowia nivea, notes, (26) 551.
 Milwaukee County School of Agriculture and Domestic Economy, survey, (36) 792.
 Mimetes setulosus, notes, (35) 364.
 Mimetic crystals, classification, (40) 609.
 Mimetite, artificial, preparation, (36) 412.
 Mimicry—
 in butterflies, treatise, (37) 55.
 paper on, (32) 399.
 treatise, (31) 57.
 Mimorista flavidissimalis, notes, (28) 451.
 Mimosa—
 pudica—
 fertilizing value, (34) 34.
 notes, (26) 362.
 permeability of pulvinus, (39) 730.
 wound stimulus in, (33) 724.
 thorn caterpillar, notes, (26) 348.
 velocity of transmission of excitation in, (34) 29.
 Mincemeat—
 examination, (27) 463, 763.
 nitrogen content, (30) 861.
 studies, (30) 665.
 Mindarus abietinus, notes, (33) 253.
 Mine timbers—
 insects affecting, (27) 554.
 preservation, (27) 443; (33) 544.
 Rocky Mountain, tests, (31) 144.
 supply of England and Wales, (32) 542.
 Mineola—
 indiginella, *see* Leaf crumpler.
 juglandis, *see* Walnut case-bearer.
 vaccinii, *see* Cranberry fruit worm.
 Mineral—
 aggregates, specific gravity, (36) 683.
 constituents of soils, (28) 215.
 constituents of soils, composition, (33) 720.
 constituents, soluble, determination in soils, (27) 515.
 content of rations, effect on growth and reproduction, (33) 666.
 deposits, treatise, (30) 719.
 elements in animal nutrition, (35) 867.
 elements in poultry feeding, (33) 572.
 matter—
 assimilation by plants, (26) 521.
 detection in wheat flour, (28) 411.
 effect on development of plantlets, (38) 329.
 effect on germination of plants, (39) 526.
 importance in food, (29) 366.
 metabolism of, (30) 562.
 removal from soil by plants, (30) 334.
 metabolism, *see* Metabolism.
 nutrients in human dietetics, (35) 269.
 nutrition of plants, (28) 124, 127, 224.
 oil, detection in other oils, (26) 611.
 oils—
 as affected by added oils, (29) 488.
 detection, (28) 412.
 detection in vegetable oils, (26) 114.
 fluorescent test for, (26) 114.
 methods of analysis, (27) 205.
 poisons, detection in organic matter, (26) 206.
 poisons, effect on growth of wheat seedlings, (38) 628.
 requirements of cattle, (33) 870.
 requirements of farm animals, (31) 864.
 resources of Texas, conservation, (34) 489.
 resources of United States, (35) 121.
 salts. *see* Salts.
 springs of Alaska, (38) 690.
 substances, determination in water, (27) 111.
 substances, soil, changes in, (31) 818.
 water, *see* Water.
 Minerals—
 composition terminology, new, (28) 318.
 ground, fertilizing value, (27) 500; (28) 33.
 movement in leaves, (27) 229.
 of United States, analyses, (34) 222.
 radioactive, effect on wheat, (27) 826.
 sand dune, weathering, (28) 220.
 soil-forming, microscopic determination, (28) 812.
 useful, in United States, (31) 322.
 Mines, humidity of air in (29) 121.
 Minidoka bird reservation, (37) 355.
 Minks—
 breeding for fur, (29) 673.
 feeding and management, (29) 70.
 raising, (35) 378; (40) 373.
 Minneapolis, Minn., as an agricultural and financial center, (36) 494.
- Minnesota—
 Crookston substation, report, (37) 297.
 Crop Improvement Association, (32) 592.
 Duluth substation, report, (37) 298; (39) 499.
 Field Crop Breeders' Association, (29) 830.
 Grand Rapids substation, report, (38) 197.
 Morris substation, report, (37) 298; (39) 499.
 State Agricultural Society, history, (27) 490.
 Station, financial statement, (26) 599; (27) 492.
 Station, notes, (26) 96, 396; (27) 198, 698, 900; (28) 495, 797; (29) 794; (30) 396; (31) 398, 900; (32) 599, 694, 899; (33) 197, 797; (34) 798; (35) 300, 398, 697, 900; (36) 695; (37) 197, 398, 497, 600, 896; (38) 399, 498, 600, 900; (39) 96, 197, 399, 500, 696; (40) 297, 497, 696.
 Station, report, (31) 195; (35) 396; (37) 297; (39) 397; (40) 797.
 Station, report of director, (26) 599; (27) 492.
 University, notes, (26) 96, 396; (27) 198, 397, 698, 900; (28) 397, 495, 697, 797; (29) 198, 794; (30) 396, 797; (31) 398; (32) 599, 599, 694, 797; (33) 197, 797; (34) 496, 798; (35) 300, 398; (36) 98; 196, 500, 695, 797; (37) 197, 299, 398, 497, 896; (38) 399, 498, 600, 699, 900; (39) 96, 197, 399, 500, 696; (40) 297, 497, 600, 696.
 Mint—
 cultivated, degeneration, (34) 44.
 culture, (34) 151.
 culture in Indiana, (38) 246.
 fungus disease affecting, (28) 154.
 rust, notes, (37) 457.
 Mirabilis jalapa—
 abscission in, (36) 225.
 betains in, (27) 204.
 diseases, inheritance in, (35) 459.
 Mirage of St. Lawrence River, (28) 716.
 Mireken nuts, analyses, (31) 631.
 Miridae—
 key to subfamilies, (39) 763.
 North American, synoptical keys, (35) 255.
 Miris dolabratus, studies, (40) 260.
 Mirollynx, new genus, (39) 468.
 Miromphalomys perilampoides n.g. and n.sp., description, (37) 162.
 Miscogasteridae of Australia, (39) 154.
 Miso—
 brewing, (30) 828.
 cleavage products of, (29) 565.
 preparation, (32) 560.
 Mississippi—
 College, notes, (26) 494; (27) 198; (29) 300, 397; (32) 396; (35) 196, 398; (37) 497; (39) 900.
 Delta Branch Station, report, (27) 494.
 McNeill Branch Station, report, (28) 299.
 River levees, effect on floods, (26) 417.
 Station, financial statement, (27) 899.
 Station, notes, (26) 96, 396, 494, 797; (27) 98, 198, 600; (29) 300; (31) 197, 496; (32) 396; (33) 900; (34) 695; (35) 398; (37) 600; (39) 900; (40) 98, 696.
 Station, report of director, (27) 899.
 Missouri—
 Country Life Conference, report, (31) 895; (32) 793.
 Fruit Station—
 financial statement, (26) 692; (29) 599.
 notes, (29) 699; (39) 96.
 report, (32) 796.
 report of director, (26) 692; (29) 599.
 Home Makers' Conference Association, (30) 462.
 Poultry Experiment Station, notes, (34) 869.
 River basin, hydrography, (32) 588.
 Station—
 financial statement, (27) 299; (29) 696.
 notes, (26) 695; (27) 98, 698; (28) 600; (29) 699; (30) 300, 698; (31) 796, 900; (32) 497, 695, 797; (33) 197, 399; (34) 96, 198, 695; (35) 96, 300, 398, 597, 697, 900; (36) 98, 599; (37) 398, 897; (38) 498, 798; (39) 197, 696; (40) 297, 497, 696.
 publications, (27) 299, 899.
 report, (31) 396; (33) 299; (35) 899; (37) 796; (38) 697.
 report of director, (27) 299; (29) 696.
 University, notes, (26) 494, 695, 900; (27) 98, 698; (28) 600, 697; (29) 97, 699; (30) 300; (31) 197, 796, 900; (32) 94, 397, 497, 695, 797; (33) 197, 399; (34) 96, 198, 396, 695; (35) 96, 398, 697; (36) 98, 599, 695; (37) 97, 398, 897; (38) 498, 699, 798; (39) 197, 696; (40) 297, 497, 696.

Mist ponds, accumulation of water in, (30) 118.

Mistletoe—

- arsenic content, (27) 830; (28) 526.
- composition, (34) 262.
- control in National Forests, (37) 458.
- effect on junipers, (31) 540.
- growth on monocotyledons and succulent conservatory plants, (29) 352; (30) 521.
- in Great Britain and Ireland, (31) 731.
- in West Indies, (40) 155.
- infection experiments, (30) 434.
- injurious to larch, (34) 547.
- injury caused by, (30) 849.
- injury to conifers, (35) 459; (39) 57.
- on citrus trees, (39) 56.
- parasitic on mistletoe, (40) 226.
- parasitism, (31) 56.
- propagation, (30) 849.
- red fruited, infection experiments, (29) 243.
- seeds, germination studies, (30) 521.
- species, hosts, (39) 554.

Mistletoes—

- false, studies, (40) 253.
 - South African, and their hosts, (36) 548.
- Mitchell grass, culture experiments, (30) 632.
- Mite galls, descriptions, (39) 868.
- Mite, purple, notes, (34) 60.

Mites—

- attacking cheese, (39) 664.
- brown, notes, (35) 253.
- classification and habits, (32) 551.
- control in greenhouses, (38) 762.
- destruction, (35) 94.
- endoparasitic, in lung of monkeys, (31) 356.
- harvest, remedies, (32) 258.
- injurious to—
 - citrus fruits, (28) 457.
 - citrus fruits, remedies, (31) 549.
 - Gramineae, (32) 853.
 - orchard and field crops in Utah, (38) 365.
 - plants in Sweden, (37) 163.
 - tea and citrus, (32) 557.
- Mexican myrmecophilous, (35) 264.
- migration, (30) 657.
- monograph, (34) 458.
- natural enemies of, (29) 262.
- new, (37) 860.
- new American species, (28) 357.
- notes, (28) 554.
- of Barbados, (40) 56.
- of Lesser Antilles, (27) 552.
- on horn flies, (26) 252.
- oyster-shell scale, (27) 861.
- poultry, (32) 481; (35) 183; (37) 357.
- scale insects, (26) 553.
- predacious, notes, (31) 656.
- relation to peach stop-back, (28) 159.
- remedies, (27) 357; (33) 98; (39) 364.
- summary of information, (39) 768.
- transmission of spirochetes by, (32) 279.

Mitochondria—

- and the vacuolar system, (39) 730.
- appearance and activities, (38) 328.
- evolution and physiological role, (32) 524.
- in myxomycetes, (40) 726.
- plant and animal cells, (38) 524.
- plant cells, (40) 323, 425, 818.
- vegetable cells, review of investigations, (33) 725.
- material for study, (39) 153.
- origin, (35) 635.
- relation to anthocyanin formation, (29) 827; (37) 25.
- role in heredity, (29) 67; (34) 629.

Mitokinetism, notes, (26) 163.

Mnemonica auricyanea, studies, (33) 655.

Mock suns (29) 812.

Möckern Experiment Station, notes, (30) 599.

Mockernut, density and porosity, (32) 47.

Moellons, methods of analysis, (35) 316.

Moerophora neodityi n.sp., description, (34) 456.

Mohair—

- industry in Northwest, (27) 278.
- production in United States, (30) 871; (31) 168.
- statistics in United States, (28) 390.

Moisture—

- atmospheric, effect on insects, (33) 252.
- determinations in entomology, (37) 355.
- distribution in the atmosphere, (34) 117.

Moisture—Continued.

effect on—

- concrete, (27) 891.
- fumigation, (29) 762.
- insects, (30) 545.
- keeping quality of corn meal, (33) 259.
- equivalent determinations, notes, (28) 537.
- hygroscopic, determination in soils, (34) 712.

Molasses—

- added, detection in sugar-beet chips, (31) 315.
- analyses, (26) 266, 873; (29) 570; (31) 556; (33) 360, 565, 568, 759; (34) 660; (36) 65.
- and cane-top silage for cattle, (32) 668.
- and molasses meal for cows, (33) 765.
- as feeding stuff, (32) 666; (34) 565, 566.
- fertilizer for sugar cane, (30) 140.
- source of alcohol, (36) 508; (38) 508.
- source of potash, (38) 124.
- beet, composition and use, (37) 416.
- beet, inversion of, (34) 13.
- beet, pentose content, (38) 113.
- beet, polarization as affected by raffinose, (38) 113.
- black-strap, for dairy cattle, (32) 470.
- black-strap for pigs, (36) 472.
- cake, analyses, (30) 467.
- cane, methods of analysis, (28) 713.
- composition and feeding value, (32) 567.
- crude, analyses, (31) 864.
- determination of solids in, (27) 497.
- determination of sucrose in, (40) 206.
- effect on adhesiveness of lead arsenate, (38) 858.
- effect on nitrification in soils, (27) 419.
- examination, (30) 113.

feed—

- acidity, (35) 770.
- analyses, (26) 72, 164, 165, 266, 267, 362, 363, 568, 873; (27) 371, 469, 570, 670, 774; (28) 265, 369, 465; (29) 467, 666, 769; (30) 67, 68, 169, 371, 467, 565, 671, 868; (31) 73, 168, 366, 467, 864; (32) 169, 259, 568, 667, 862; (33) 71, 371, 568, 759, 870; (34) 263, 467, 566, 767; (38) 572; (40) 571.
- composition and feeding value, (32) 567.
- feeding value, (26) 164, 468, 873; (27) 469; (28) 265; (39) 778; (40) 672.
- for dairy cattle, (34) 671.
- for ruminants, (32) 768.
- methods of analysis, (29) 311.
- nutritive value, (29) 65.
- preparation, (26) 164.
- use of dried yeast in, (26) 567.
- fermentation, (35) 718.
- fertilizing value, (30) 822; (32) 336; (35) 817; (38) 438, 515; (39) 537.
- for beef cattle, (33) 759; (38) 667.
- for livestock, (29) 570; (30) 176.
- formation, (35) 14.
- formation, relation to raffinose, (26) 116.
- glucose in, (39) 206.
- grass, culture in Philippines, (26) 361, 362.
- grass, culture in Porto Rico, (29) 631.
- manufacture from milk, (30) 378.
- meal, analyses, (32) 465; (34) 169.
- mercuric acetate precipitate from, (29) 614.
- methods of analysis, (26) 814; (31) 806; (38) 804; (40) 412.
- mixture, analyses, (27) 371.
- nature and standards, (31) 556.
- nitrogen content, (30) 209, 529.
- nutritive value, (29) 65, 460.
- refuse, betain from, (28) 413.
- residue, guanin pentosid from, (26) 116.
- sludge, composition and fertilizing value, (33) 818.
- statistics in United States, (33) 894.
- studies, (27) 766; (40) 313.
- turf, analyses, (33) 870.
- unfermentable sugar of, (39) 207.
- water content, (39) 415.

Molassine meal—

- analyses, (33) 759.
- composition and digestibility, (32) 666.

Mold—

formation as affected by fluorin, (32) 308.

fungi—

- assimilation of elementary nitrogen by, (32) 728.
- assimilation of nitrates by, (31) 223.
- assimilation of salts by, (29) 28, 29, 30.

Mold—Continued.

- fungi—continued.
 - autolysis, (28) 803.
 - carbon and nitrogen assimilation by, (33) 726.
 - formation and regulation of enzymes by, (31) 730.
 - nitrogen nutrition, (32) 327; (36) 527.
 - protein metabolism of, (33) 202.
 - relation to cane sugar, (28) 429.
 - relation to iodine compounds, (29) 133.
 - selective power of, (33) 824.
- mycelia, organic constituents of, (30) 226.
- spores as affected by pasteurization, (35) 276.

Molds—

- activity in soil, (40) 122, 318, 721.
- as affected by iron, (27) 228.
- as affected by spices, (35) 557; (38) 469.
- bacteria, and yeasts, treatise, (27) 727.
- destruction of paraffin by, (32) 523.
- effect on corn meal, (28) 663.
- effect on soils, (31) 818; (38) 118.
- in alimentary canal of man and animals, (55) 559.
- butter, (32) 675.
- butter, prevention, (37) 777
- eggs, studies, (31) 570.
- on cigars, (31) 613.
- penetration of egg shells by, (29) 765.
- relation to organic soil constituents, (29) 817.
- resistance to disinfectants, (26) 478.
- respiratory pigments of, (26) 326.
- soil, composition, (31) 12.
- source of nitrogen for, (27) 226.
- toxicity to honeybee, (38) 564.
- utilization of polyatomic alcohols by, (30) 226.

Mole cricket—

- bird enemies of, (34) 849.
- destruction by herons, (28) 751.
- European, in New Jersey, (34) 653.
- European, notes, (36) 854; (39) 763.
- injurious to rice, (34) 61.
- introduction into New Jersey, (37) 660.
- notes, (26) 60; (28) 555; (29) 52; (31) 452; (36) 355.
- parasites of, (29) 653.
- remedies, (33) 452.
- studies, (29) 557.
- West Indian, studies, (38) 762.

Mole skins—

- market for, (35) 696.
- tanning, (37) 96.
- utilization, (38) 53.

Molecules of vapors, measurement, (38) 511.

Mole-draining in England, (31) 685.

Moles—

- American, monograph, (34) 158.
 - common, feeding habits, (31) 846.
 - common, notes, (31) 154.
 - effect on calcium carbonate content of soils, (27) 619.
 - insectivorous habits, (34) 58.
 - notes, (33) 98; (37) 699.
 - stomach contents, (38) 257.
 - studies, (31) 451.
 - trapping, (28) 553; (35) 94; (36) 396; (38) 53.
- Molina caerulea, ecology of, (33) 527.
- Mollardia, new genus, notes, (27) 46.
- Mollusca, dissemination by bobolinks, (30) 851.
- Mollusk injurious to vegetables, (39) 655.
- Mollusks, refrigeration, (28) 563.
- Molteno disease in cattle and horses, cause, (26) 780.

Molybdenum—

- in plants, (38) 409.
- in soils, (31) 720.
- residues, recovery, (37) 504.

Molybdenic—

- acid, effect on plant growth, (35) 434.
- acid, recovery, (34) 204, 608; (36) 805.
- trioxide, determination, (27) 208.

Mometa zemiodes n.g. and n.sp., description, (33) 155.

Mominiae in British Museum, catalogue, (31) 652.

Monarthropalpus buxi—

- notes, (30) 154, 253; (32) 245; (34) 64, 752; (36) 551; (40) 754.
- remedies, (33) 859; (39) 362.

Monarthrum—

- mali, notes, (36) 258.
- spp., studies, (31) 852.

Monas mülleri, studies, (30) 133.

Monascus—

- heterosporus—
 - notes, (28) 241.
 - relation to rubber spotting, (29) 451.
- purpureus—
 - effect on corn meal, (28) 663.
 - relation to forage poisoning, (35) 76.
 - storage of oxygen by, (28) 329.
 - studies, (33) 224.

Moneophora bicincta, notes, (38) 557; (40) 453, 556.

Monilema crassum, notes, (28) 451.

Monellia—

- caryella on pecan, (38) 157.
- costalis, notes, (38) 762.
- spp., notes, (38) 256.
- spp., studies, (31) 753.

Moneys, conversion into metric system, (30) 697.

Mongoose—

- as pest in Trinidad, (31) 547.
- relation to crop damage in Barbados, (38) 154.

Mongos, liming experiments, (36) 229.

Moniezia—

- cell division in, (28) 272.
- expansa, infestation of lambs by, (37) 374.
- expansa, life cycle, (39) 162.

Moniezella bipunctata n.sp., description, (38) 63

Monilia—

- candida—
 - assimilation of nitrogen by, (28) 35.
 - experimental propagation, (29) 858; (30) 161.
 - capsulata, relation to lymphangitis, (38) 83.
- cinerea—
 - description, (27) 152.
 - enzymatic activity, (27) 249.
 - notes, (35) 54; (35) 454; (36) 751; (38) 50; (40) 749, 845.
 - studies, (40) 850.
 - treatment, (28) 244; (31) 843.

fructigena—see also Cherry, Peach, and Plum

- brown rot.
 - (M. laxa), description, (35) 49.
 - notes, (27) 850; (35) 248; (36) 649, 750; (37) 151, 457.
 - on quince, (33) 54.
 - relation to temperature, (33) 545.
 - sclerotia of, (29) 445.
 - studies, (26) 749; (36) 750; (38) 649; (40) 649.
 - treatment, (32) 148; (39) 752.
- laxa, notes, (38) 50.
- linhartiana, notes, (28) 850; (29) 50.
- outbreak on apricot in Rhone Valley, (35) 249.
- sitophila, ammonia production, (35) 513; (36) 221.
- sitophila, ammonifying power, (32) 29.
- sp. on fruit trees in Oregon, (34) 351.
- sp., relation to apple rot, (33) 348.
- spp. in sugar, (38) 806.
- spp. in Sweden, (33) 846.
- spp. on apple, (38) 453.
- spp. on fruit trees, (35) 654.
- spp., studies, (26) 849.
- vinii n.sp., description, (27) 224.
- vinii n.sp., notes, (29) 116.

Moniliopsis aderiholdii—

- and Rhizictonia solani, identity, (36) 145.
- notes, (34) 749.

Monilochaetes infusans—

- notes, (33) 347.
- studies, (34) 156, 646, 747; (40) 347.

Monkeys—

- chromatin bodies in erythrocytes of, (29) 478.
- susceptibility to pneumonic plague, (28) 180.
- Monks, Japanese, vegetarian diet of, (30) 863.
- Monoamino acids, detection in presence of poly-peptides, (27) 410.
- Monobaeus hegelii n.sp., description, (37) 667.
- Monoblastus caliroae n.sp., description, (29) 563.

Monocalcium—

- paracaseinate, formation in cheese, (29) 11.
- phosphate—
 - as affected by certain soil constituents, (30) 722.
 - as green forage preservative, (28) 464.
 - determination, (32) 409.
 - effect on soils, (26) 216.

- Monochaetia**—
 desmazieri, notes, (28) 55.
 mail, inoculation experiments, (31) 150.
Monocotyls, reproduction by grafting and cuttings, (30) 532.
Monocrepidius—
 exsul, notes, (27) 656.
 spp., studies, (30) 546.
 vesperinus, studies, (33) 63, 158.
Monocotylus secundus n.sp., description, (34) 363.
Monodontomerus areus, notes, (26) 753; (27) 455 (29) 252; (37) 459.
Monohammus fistularis, notes, (40) 654.
Monolepis nuttalliana, geographical distribution, (26) 335.
Monolexis laragnei n.sp., notes, (30) 856.
Monomethylamin, relation to flavor of coot, (31) 555.
Monorum—
 latinode, relation to Asiatic cholera, (31) 752.
 pharonis, trail formation and orientation, (29) 860.
Mononchs, studies, (38) 254.
Monophagism, studies, (40) 869.
Monopotassium phosphate as affected by calcium carbonate, (26) 527.
Monopylidium infundibulum, notes, (26) 561.
Monosaccharids—
 absorption in the intestines, (28) 763; (29) 268.
 determination, Barfoed's test, (34) 411.
 reducing power, (30) 111.
Monstera deliciosa, parthenocarp in, (36) 331.
Montana—
 College, notes, (29) 97, 397, 600; (30) 497, 698; (31) 496; (32) 94, 497, 797; (33) 198; (34) 97; (35) 196, 399, 698; (36) 899; (38) 400; (39) 500, 696; (40) 199.
 Fergus County substation, report, (29) 696.
 Station—
 financial statement, (28) 395; (29) 696.
 notes, (26) 396; (27) 98; (28) 797; (29) 97, 397, 600; (30) 698; (31) 496; (32) 94, 497, 797; (33) 198; (34) 97; (35) 96, 196, 399, 698; (36) 99; (37) 299, 498; (38) 400; (39) 500, 696; (40) 199.
 report, (31) 694; (33) 599; (36) 294; (38) 398; (40) 494.
 report of director, (28) 395; (29) 696.
Moon—
 effect on weather, (27) 509, 817; (29) 314; (33) 320; (34) 509; (38) 510.
 internal structure, (34) 614.
 relation to autumn storms, (32) 316.
Moonflower, hybridizing experiments, (33) 242.
Moonlight—
 and sunlight, relation, (38) 811.
 effect on fish and meat, (31) 759.
Moonrise and noonset, computing time of, (35) 808.
Moor culture—
 experiments, (39) 437; (40) 229, 522;
 handbook, (27) 638; (31) 620.
 in Austria, (31) 118.
 instruction in high schools, (33) 791.
 profitability, (32) 390.
 review of investigations, (30) 120.
 treatise, (32) 38.
Moor—
 hay causing excessive licking in cattle, (32) 567.
 of Steinhude Lake region, (33) 324.
 plantations, machinery for, (29) 488.
 soils—*see also* Peat soils.
 analyses, (33) 324.
 as affected by lime, (29) 823; (31) 220.
 blasting experiments, (32) 589.
 bog and moss, fertilizer experiments, (40) 135.
 bog and moss, water table and root development in, (40) 211.
 cryptogamic flora of, (28) 727.
 cultivation and fertilization, (27) 824.
 decomposition of cellulose in, (31) 25.
 disinfection experiments, (35) 724.
 drainage and cultivation, (31) 732.
 effect of mixing with lighter soil, (29) 19.
 fertilizer and field trials with, (26) 423.
 fertilizers for, (29) 516.
 horticulture on, (26) 136.
 improvement, (32) 719.
 inoculation experiments, (40) 822.
 lime requirements, (31) 726.
 liming experiments, (34) 18.
Moor—Continued.
 soils—continued.
 nitrate content, (30) 325.
 nitrate formation in, (40) 811.
 of northwest Germany, studies, (29) 514.
 of Steinhude Lake region, (33) 324.
 phosphatic fertilizers for, (27) 325.
 sulphur in, (36) 424.
 utilization, (33) 325.
Moors—
 burning for grouse and sheep, (40) 667.
 land-climate and sea-climate, (30) 514.
 upland, formation, (29) 124.
Moose—
 protection in Alaska, (36) 791.
 treatise, (38) 53.
Mora River, profile survey, (36) 583.
Morchella esculenta, prevalence in South Africa, (29) 461.
Mordellistina unicolor, notes, (35) 55.
Mordwilkoja vagabunda, notes, (31) 351.
Morganella maskelli, notes, (30) 454.
Moricandia arvensis, analyses, (33) 466.
Morning-glories—
 extermination, (26) 236; (30) 838; (34) 228.
 heredity in, (38) 750.
 spotting by raindrops, (29) 752.
 wild, spraying for, (38) 140.
Morning-glory—
 Japanese, crossing experiments, (33) 242.
 Japanese, inheritance in, (40) 541.
 seed, impermeable, viability, (35) 740.
Morphin—
 detection in water, (34) 410.
 determination, (27) 499.
 effect on plant growth, (37) 632.
Morphology—
 as factor in determining relationships, (33) 822.
 index catalogue, (32) 166.
Morse, E. W., biographical sketch, (32)-800.
Mortar—
 as affected by—
 fineness of sand, etc., (33) 781.
 hydrated lime, (31) 687.
 lime, (36) 286.
 tests, (29) 786.
 waterproofing, (35) 493.
Mortus, fungicidal value, (34) 843.
Mosaic disease—*see also specific host plants.*
 carrier, (40) 251.
 studies, (31) 52; (38) 48.
Mosquito—
 bites, palliatives for, (40) 168.
 larvae, development in relation to bacteria and yeasts, (37) 763.
 larvae, sex of, (28) 560.
 larvicide disinfectant, preparation and standardization, (27) 265.
 larvicides, (40) 458.
 sanitation, pioneers in, (34) 453.
 trap, description, (27) 61.
Mosquitoes—*see also Anopheles, Culex, and Malaria.*
 and malaria in eastern North Carolina, (32) 61.
 and malaria, notes, (31) 551.
 anopheline—
 in California, (37) 565.
 India, monograph, (26) 349.
 the South, (33) 255.
 Tonkin, (26) 677.
 infectibility, (37) 463.
 remedies, (29) 759.
 as affected by salinity of sea water, (36) 255.
 anthrax carriers, (39) 161.
 host of *Critidia fasciculata*, (30) 757.
 winter carriers of malaria, (34) 856.
 bibliography, (33) 560.
 biology and control, (39) 867.
 breeding, (34) 358.
 breeding grounds of, (26) 860.
 collecting device for, (36) 255.
 control, (27) 266, 559, 655, 759; (30) 159, 361, 655; (31) 58, 351; (33) 58, 486, 656; (36) 853, 855, 858; (37) 255; (38) 562; (39) 659, 761, 766, 866; (40) 552, 648, 653.
 control in—
 California, (28) 560.
 Connecticut, (28) 554; (34) 856; (35) 54; (37) 259.
 India, (35) 361.
 Mexico, (31) 756.

Mosquitoes—Continued.

control in—continued.

New Jersey, (28) 756; (31) 454; (32) 551; (34)

160; (39) 866.

New York, (30) 657; (36) 856

Panama, (35) 855.

the Tropics, (28) 62.

destruction, (37) 86, 464.

destruction by—

bats, (31) 62.

cyanid gas, (36) 456.

ducks, (34) 856.

Dytiscus, (38) 766.

fish, (27) 656.

Toxorhynchites immisericoors, (26) 349.

detecting flight of, (29) 656.

development of—

Leishmania donovani in, (26) 656.

malaria parasite in, (38) 658.

disease-bearing, descriptions, (31) 254.

dissemination by river vessels, (27) 456.

distribution in North America, (27) 655.

eradication (27) 560; (29) 293; (34) 358, 553.

fish enemies, (37) 260.

flight of, (37) 853.

growth in catch basins, (39) 157.

habits, (33) 154.

handbook, (28) 455.

in San Juan, (28) 254.

lake, in Canal Zone, (40) 653.

life history and control, (37) 664.

malarial—

identification, (39) 867.

losses to rural industries from, (33) 749.

of India, (35) 759.

treatise, (33) 155.

midge parasite of, (26) 559.

natural enemy, (39) 660.

notes, (27) 53, 862; (28) 158, 355; (36) 552; (37)

57, 156.

of Bahamas, (38) 766.

Brisbane, (35) 258.

Colorado, (39) 262.

Havana, (38) 580.

Minnesota, (38) 155.

Montana, (37) 255.

mountains of California, (37) 564.

New Jersey, (28) 560; (34) 64.

New Orleans, (30) 456.

North America and West Indies, treatise,

(29) 357; (34) 453; (37) 762.

Pacific Northwest, (38) 766.

Peru, (37) 357.

Philippines, (26) 61.

San Diego, California, (36) 552.

Switzerland, (35) 361.

Transvaal, (26) 882; (29) 476.

United States, (38) 766.

petroleum oil larvicides, (39) 466.

pollination of orchids by, (30) 658.

relation to—

poliomyelitis, (38) 262.

salinity of water, (37) 259.

sewage disposal, (32) 554.

surra, (31) 777.

swamp fever in horses, (32) 754; (37) 374.

respiration of, (34) 756.

role of blood in reproduction of, (38) 160.

salt marsh, control, (29) 559.

screening against, (31) 292, 756, 787.

studies, (29) 252.

summary of information, (39) 766.

transmission of—

leprosy by, (26) 759.

malaria by, (35) 360, 361.

poliomyelitis by, (28) 753.

treatise, (26) 251.

trematode parasite, (38) 562; (39) 660.

wind-forced migration, (39) 861.

yellow fever, early name, (36) 552.

yellow fever, notes, (29) 656.

Moss—

as bedding for cattle and horses, (37) 723.

ball, anatomy and biological aspects, (26) 729.

cleaning from irrigation canals, (37) 285.

destruction in pastures, (26) 534.

destruction on fruit trees, (33) 857.

reindeer, culture experiments, (36) 369.

wood, eradication, (31) 836.

Mosses—

eradication, (29) 741.

heat development of, (31) 323.

on trees in Denmark, (36) 825.

Moth bean—

culture, (32) 226.

description, (31) 740.

hay, digestibility and productive value, (37) 865.

meal, analyses, (38) 572.

notes, (26) 362.

Moth beans, yields, (39) 434.

Moth borer—

Mexican, notes, (35) 657.

new, on pear trees, (37) 847.

Moth borers—

injurious to sugar cane, (38) 465.

notes, (38) 459.

remedies, (32) 553.

Moth, diamond-back, notes, (27) 53.

Mothers, nursing, as factor of safety in nutrition of

the young, (40) 661.

Moth marvel grass, analyses, (28) 768.

Moths—see also Lepidoptera.

collecting and preserving, (35) 594.

pollination of alfalfa by, (26) 633.

treatise, (37) 358.

Motion, effect on chemical equilibrium, (28) 168.

Motor—

and plough combination, description and tests,

(28) 486.

and wagon hauling, costs, (40) 93.

cultivators, see Cultivators and Cultivation.

plows, see Plows.

power v. horses, treatise, (29) 388.

spirits as substitute for gasoline, (32) 788.

truck efficiency, (40) 387.

truck loads for highway bridges, (36) 489.

truck route, cooperative, (40) 893.

trucks—

as factor in marketing, (30) 295.

effect on road surfaces, (29) 388.

fuel for, (30) 892.

tractive resistance on roads, (36) 490.

use in road maintenance, (27) 88; (35) 888.

v. horses, comparison, (29) 489; (30) 387, 388.

with trailers, efficiency, (28) 892.

vehicle—

laws and regulations, (29) 291.

registration and revenues, (33) 189.

registrations, licenses, and revenues, (35)

585.

vehicles—

new fuel for, (29) 184.

relation to rural life, (26) 685.

wind, description, (28) 187.

Motors—

agricultural, tests, (27) 588, 689, 690.

and dynamos, treatise, (29) 892.

cost of operation in Montevideo, (28) 385.

electric—

connecting for direct drive, (30) 190.

for farm power, (32) 589.

fuel consumption and energy utilization in,

(31) 385.

service tests, (29) 892.

farm, self-steering apparatus for, (32) 86.

farm, treatise, (31) 186.

for piston pumps and pump jacks, (39) 87.

gasoline for, (27) 690.

internal combustion, notes, (30) 388.

naphthalin, notes, (30) 190.

Mottled leaf, spread by budding, (26) 441.

Mottling disease of sugar cane, see Sugar cane.

Mouflon, relation to sheep pox, (28) 183.

Mountain—

apples, host plant of fruit fly, (26) 758.

ash louse on olive, (38) 157.

climbing in cold weather, effects, (32) 564.

pine beetle, notes, (26) 561; (32) 552.

slopes, climatic influence, (29) 414.

Mountains—

relation to conservation of snow, (28) 414, 514;

(31) 510; (36) 17.

value to fruit growers, (26) 214.

Mouse—see also Mice.

bite causing sporotrichosis, (40) 180.

favus, relation to Australian wheat, (40) 583.

typhoid cultures, tests, (27) 888.

typhoid, immunization, (32) 375.

- Mowers—
care and repair, (39) 292.
motor-driven, descriptions, (27) 485.
- Mowing machine, tests, (27) 892.
- Mowrah—
butter, detection, (29) 613.
cake, agglutinating properties, (31) 774.
fat, detection in edible fats, (32) 507.
meal, analyses, (31) 366.
meal, analyses and use, (30) 267.
seed, composition and nutritive value, (34) 565.
- Mucilage—
effect on germination of seeds, (27) 427.
linseed, studies, (32) 802.
- Mucilages, plant, studies, (40) 818, 819.
- Mucin—
antigenic properties, (33) 773.
formation by tubercle bacilli, (31) 284.
occurrence in plants, (29) 308.
substances, chemistry of, (31) 409.
- Mucinase in yams, (34) 312.
- Muck—
agricultural value, (30) 588.
analyses, (27) 327; (32) 424, 520; (34) 521; (36) 27.
analyses and use, (34) 519.
and peat soils, subsidence after drainage, (38) 690.
as source of organic ammoniates, (37) 815.
availability of nitrogen in, (38) 423.
deposits of Vermont, (28) 422.
effect on soil granulation, (26) 420.
fertilizing value, (36) 516; (40) 134.
fertilizing value, judging, (37) 216.
- soils—
analyses, (26) 127.
improvement, (33) 33; (34) 885.
management, (36) 191, 236.
notes, (27) 617.
of Florida, analyses, (32) 811.
of Washington, potash requirement, (40) 422.
or humus, for greenhouse crops, (33) 139.
utilization, (32) 213.
- Mucor—
ammonifying power, (32) 29.
cyanogenes n.sp., description, (38) 824.
erectus, notes, (28) 562.
mucedo, in tamari-koji, (29) 161.
mucedo, notes, (31) 55.
n.sp., studies, (36) 734.
piriformis, studies, (26) 749.
plumbeus, ammonia production by, (35) 513; (36) 221.
prainii, notes, (28) 761.
- racemosus—
and Empusa muscae, relationship, (34) 254.
isolation from cheese, (26) 479.
notes, (31) 542; (32) 843.
occurrence in sugar, (26) 505.
studies, (39) 854; (40) 347.
- spp., on citrus, (34) 446.
spp., source of nitrogen for, (27) 226.
stolonifer, notes, (26) 647; (30) 243.
stolonifer, relation to apple rot, (33) 348.
variations in, (30) 729.
- Mucorin crystalloids in mitochondria, (35) 635.
- Mucorineae, studies, (27) 134.
- Mucors, identifying sex in, (29) 216.
- Mucous membrane—
extract, effect on action of trypsin, (26) 159.
of domestic animals, studies, (26) 480.
- Mucuna—
luna, analyses and digestibility, (28) 464.
sp., fertilizing value, (34) 34.
utilis, analyses, (31) 863.
utilis, culture, (30) 335.
- Mud—
analyses, (27) 327.
fertilizing value, (29) 129, 625.
pond, fertilizing value, (27) 825.
puppies in Pennsylvania, (31) 648.
river and tidal, analyses, (36) 27.
transportation by rivers, (27) 511.
- Mulberries—
culture experiments, (28) 236.
culture in Mexico, (30) 144.
red spider affecting, (26) 254.
- Mulberry—
blight, American and French, identity, (31) 347.
blight in South Africa, (34) 649.
- Mulberry—Continued.
diseases in France, (33) 54, 448; (37) 655.
diseases in Italy, (33) 448; (37) 655.
diseases, notes, (27) 547; (29) 243.
diseases, studies, (27) 49; (36) 751; (37) 651.
leaves, adenin and asparaginic acid in, (31) 203.
leaves, composition as affected by sunlight, (35) 333.
leaves, nitrogen in, (37) 525.
pests in Formosa, (40) 163.
scale—
control by parasites, (34) 456.
notes, (32) 847.
parasites of, (27) 455.
remedies, (32) 755.
West Indian host plants of, (26) 248.
seed oil, chemistry of, (26) 504.
white fly, notes, (34) 752.
- Mulch of coffee estates, fertilizing value, (28) 223.
- Mule and horse as twins, (38) 574.
- Mules—
brains of, (31) 168.
breeding at Poitou, France, (31) 170.
breeding in Sao Paulo, (29) 368.
care and management, (30) 772.
color inheritance in, (38) 574.
cost of keeping, (38) 790.
cottonseed meal for, (39) 375.
destruction by parasites, (28) 82.
digestion experiments, (32) 262.
feeding experiments, (26) 362; (30) 772; (31) 769; (32) 670; (37) 681.
fertility, (36) 372.
grape marc for, (32) 567.
harness wounds, (39) 85.
immunization against—
anthrax, (28) 778.
hemorrhagic septicemia, (28) 881.
trypanosomiasis, (28) 784; (32) 181.
in Germany, (33) 296.
Kongo, (31) 865.
Tunis, description, (27) 571.
United States, (31) 73, 167.
infection with Trypanosoma hippicum, (26) 884; (27) 82.
inspection and disinfection for interstate shipment, (34) 185.
maintenance tests with oat hulls, (29) 367.
mucous membrane of, (26) 480.
production, notes, (39) 74.
raising in the South, (32) 570; (36) 70.
short-faced Abyssinian, notes, (32) 366.
spermatogenesis in, (27) 371.
sterility in, (34) 568.
textbook, (31) 470.
- Mullein—
notes, (30) 145.
thrips, sex determination in, (38) 558.
- Mullen, eradication, (26) 839.
- Multiceps—
gaigeri n.sp., description, (36) 354.
multiceps in Wales, (39) 283.
multiceps, notes, (27) 182.
- Mungo beans—
as green manure, (39) 437.
as poultry pasture, (40) 729.
culture experiments, (28) 735; (37) 529.
culture in Philippines, (40) 231.
description, (30) 828; (31) 740.
fertilizer experiments, (31) 421; (37) 336.
field tests in Fiji, (40) 231.
for rice soils, (35) 338.
intercropping corn with, (40) 627.
notes, (26) 362.
raffinase content, (40) 171.
varieties, (37) 336.
- Mungo meal, analyses, (38) 572.
- Municipal waste, fertilizers from, (33) 219.
- Murgantia histrionica, see Harlequin cabbage bug.
- Muriate of potash, see Potassium chlorid.
- Muridae—
new, of Argentina, Patagonia, and Cape Horn, (37) 357.
of Great Britain, (34) 57; (35) 252.
- Murrina, studies, (27) 782.
- Murrina, transmission, (27) 82, 480.
- Mus, see also Mice and Rats.
norvegicus, Acari on, (32) 353.
norvegicus, parasites of, (26) 833.

Mus—Continued.

- norvegicus, prolificacy of, (26) 346.
- rattus, bacterial disease of, (29) 58.
- rattus, breeding in captivity, (26) 654.
- spp., notes, (29) 158.
- sylvaticus, control in France, (29) 651.
- Musa textilis**—
 - binder twine from, (27) 534.
 - fiber, strength of, (29) 813.
- Musca**—
 - corvina, hibernation, (34) 254.
 - domestica, *see* House flies.
 - hematophagous species, (30) 756.
 - Indian species, classification, (38) 563.
 - misuse of generic name, (34) 253.
 - oetustissima, notes, (33) 153.
 - specific differences in, (35) 856.
- Muscardine**—
 - fungus, green, in Porto Rico, (39) 868.
 - fungus in Queensland, (32) 555.
 - use against sugar cane pests, (29) 846.
- Muscardines**, notes, (32) 63.
- Musci**, carbohydrates of, (36) 609.
- Muscidae** as bloodsucking larvae, notes, (34) 555.
- Muscina**—
 - (Passeromyia) heterochaeta, notes, (36) 359.
 - spp., hibernation, (34) 254.
 - spp., notes, (30) 457.
 - spp., studies, (37) 764.
 - stabulans—
 - notes, (26) 147; (28) 255.
 - relation to leprosy, (31) 851.
 - studies, (37) 665.
- Muscivora forficata**, feeding habits, (28) 56.
- Muscles**—
 - chemistry of, (28) 201; (31) 861.
 - chemo-dynamics of, (30) 263; (31) 166.
 - contraction, studies, (27) 666.
 - creatin content, (28) 865; (33) 566.
 - creatin content, effect of autolysis on, (35) 766.
 - creatin content, factors affecting, (30) 65.
 - creatinin content, (32) 764; (33) 566.
 - fibers, occurrence of fat in, (26) 366.
 - from fasting dogs, composition, (29) 664.
 - heat production in, (32) 257.
 - hydrogen-ion concentration during work, (40) 274.
 - juice, proteins of, (30) 766.
 - living smooth, studies, (27) 169.
 - methods of analysis, (35) 614.
 - of healthy and diseased animals, bacterial content, (26) 176.
 - potassium, sodium, and chlorin content, (26) 566.
 - protein, specific heat of, (33) 566.
 - purin bases in, (29) 366.
 - respiratory process in, (37) 266.
 - smooth, ash analyses, (27) 273.
 - striated, interstitial granules, (27) 466.
 - striated, phosphorus in, (32) 561.
 - striated, structure, (27) 768.
- Muscoid**—
 - Diptera, new, of America, (37) 764.
 - flies, new genera, (34) 554, 555, 855.
 - flies, new, of western South America, (30) 56.
 - flies of Peru, (34) 655.
 - flies, studies, (26) 860.
 - genera and species, new, (40) 859.
 - genera, new, for old species, (33) 156.
 - genotypes, notes, (35) 760.
 - species, nonintentional dispersal by man, (35) 259.
 - synonymy, (40) 758.
- Muscoidea**—
 - acalyptrate genus of, (34) 65.
 - new, from west and southwest, (34) 855.
 - new genera and species of Australia, (35) 660.
 - new, in Canada and Alaska, (34) 65.
 - of Australia, (36) 554.
 - of Brazil, (39) 563.
 - of New England, (35) 760.
 - synonymical notes, (34) 360, 554.
- Muscovite**—
 - as source of potash, (26) 426; (27) 520; (30) 216; (34) 425; (36) 728; (37) 505.
 - fertilizing value, (27) 725; (28) 33; (29) 625; (39) 728.
 - potash, solubility, (34) 328; (40) 812.

Muscular—

- and mental work, notes, (28) 765.
- bioenergy of living organisms, (28) 168.
- contraction, cause, (27) 768.
- contraction, determination of efficiency, (29) 568.
- energy, origin, (29) 466.
- fatigue, measurement, (28) 570.
- motion, nature, (37) 266.
- paralysis following tick bite, (31) 656.
- tissue, function in urea formation, (37) 802.
- tissue, glycolytic properties, (37) 802.
- tissue, metabolic changes in, (32) 359.
- work and the respiratory quotient, (33) 464.
- work as affected by protein consumption, (33) 166.
- work, effect on—
 - blood, (32) 765.
 - body temperature, (26) 466.
 - body temperature and pulse rate, (32) 664.
 - carbon dioxide excretion, (29) 569; (31) 561.
 - cholesterol content of blood and suprarenal bodies, (31) 465.
 - energy factors of urine, (26) 161.
 - gaseous metabolism, (29) 167.
 - gastric secretion, (26) 160.
 - man, (28) 168.
 - metabolism, (32) 67, 765; (36) 763.
 - women, (29) 568.
- work—
 - heat production in, (30) 766.
 - importance of training in, (28) 868.
 - metabolic study of, (31) 465.
 - physiology of, (30) 263; (31) 166.
 - static and negative, studies, (26) 871.
- Museum**—
 - educational, at Clark University, (29) 898.
 - pests, remedies, (32) 650.
- Mushroom**—
 - bacterial disease, studies, (33) 446.
 - extracts, effect on red blood corpuscles, (30) 879.
 - Mycogone disease, description, (32) 50.
 - pests and their control, (36) 853.
 - root rot, treatment, (30) 649.
 - spring-tail, remedies, (36) 854.
 - wild winter, (39) 571.
- Mushrooms—see also Fungi**, edible.
 - analyses, (34) 761.
 - and other common fungi, (33) 65.
 - and toadstools, handbook, (31) 628.
 - cultivated, nutrition, (26) 440.
 - culture, (27) 842; (38) 147.
 - culture and preparation, (27) 329.
 - description and preparation, (32) 760.
 - diseases and deformities of, (31) 842.
 - edible and nonedible, of Nancy, France, (31) 759.
 - edible and poisonous, (33) 338; (37) 263; (39) 445.
 - edible, detecting adulterations in, (30) 880.
 - fungus diseases, (40) 157.
 - hydrocyanic acid in, (26) 228.
 - insects affecting, (27) 657.
 - loss in blanching, (34) 256.
 - notes, (28) 861.
 - of Minnesota, book, (27) 528.
 - treatise, (34) 532, 761.
 - wild, for food, (38) 768.
 - zymase formation in, (39) 733.
- Musk**—
 - grasses, culture for wild ducks, (33) 251.
 - ox, conservation, (37) 757.
 - ox, variation in, (31) 768.
- Muskmelon**—
 - anthracnose, (35) 652; (40) 250.
 - diseases, notes, (31) 747.
 - leaf spot in Indiana, (39) 52.
 - new Siberian, (39) 346.
 - rinds, analyses, (38) 626.
 - seed, distribution of nitrogen in, (36) 269.
 - wilt, notes, (29) 847.
 - wilt, notes and treatment, (28) 746.
- Muskmelons**—
 - acidity, (32) 110; (37) 714.
 - calcium content, (39) 747.
 - critical period of growing season, (39) 811.
 - culture, (33) 238.
 - culture experiments, (29) 743; (35) 341; (37) 742.
 - culture in Indiana, (38) 241.
 - culture in North Carolina, (34) 41.
 - effect on composition of urine, (31) 761.

Muskmelons—Continued.

- fertilizer experiments, (26) 817; (28) 46; (31) 533; (37) 742.
- Fusarium disease affecting, (26) 54.
- grading, packing, and shipping, (34) 737.
- handling, (39) 240.
- insects affecting, (31) 248.
- marketing, (34) 340, 737.
- shipping, (39) 444.
- spraying, (39) 345.
- varieties, (37) 143.
- water requirement, (32) 127.
- western, marketing, (36) 138.

Muskrats—

- in Bohemia, (34) 58.
- new trematode affecting, (27) 52.
- parasites of, (29) 484; (33) 863; (37) 355.
- possibilities for fur and meat production, (38) 154.

Muskus grass, analyses, (32) 166.

Mussel-bed mud, analyses, (30) 121.

Mussels—

- as food, (26) 356; (31) 356; (35) 859; (40) 657.
- fertilizing value, (33) 820.
- sewage-polluted, danger from, (27) 866.

Mussidia nigrivenella, notes, (28) 555.

Must—

- analyses, (29) 119; (36) 801.
- effect of X-rays on fermentation, (27) 231.
- fermentation, (29) 119; (30) 712.
- from American native grapes, composition, (30) 16.
- from grapes infected with fungi, (30) 612.
- industry in Uruguay, (32) 744.
- making investigations, (36) 801.
- Saccharomyces in, (30) 712.
- separated, analyses, (37) 809.
- utilization, (27) 441.

Mustard—

- and lupines, continuous culture, (29) 431.
- applying fertilizing solutions to aerial portions, (30) 129.
- as affected by cyanamid and dicyanodiamid, (40) 724.
- as affected by soil disinfectants, (31) 621.
- as green manure, (35) 426; (40) 24, 229.
- bacterized peat for, (39) 116.
- beetle attacking water cress, (36) 658.
- beetles, notes, (27) 457.
- black, notes, (30) 145.
- bran, analyses, (32) 667.
- cakes, toxicity, (26) 567.
- culture experiments, (26) 233; (27) 638.
- destruction, (27) 31.
- effect on companion crop of oats, (36) 438.
- eradication, (26) 839.
- fertilizer experiments, (26) 631; (27) 422; (28) 736, 819; (30) 427; (31) 133; (32) 842; (34) 25, 327, 421, 820; (36) 134; (38) 230; (40) 515.
- fertilizing value, (27) 831.
- flour, methods of analysis, (27) 12.
- gas poisoning, (40) 382.
- gas, skin lesions produced by, (39) 585.
- growing, nitrogen compounds in, (26) 824.
- growth as affected by light, (28) 227.
- growth as affected by sulphur, (32) 724.
- growth in shade, (29) 130.
- Indian, studies, (36) 228.
- insects affecting, (31) 849.
- liming experiments, (32) 127.
- molasses sludge as fertilizer for, (33) 818.
- nitrification, (28) 124.

oil—

- action on grape must fermentation, (36) 801.
 - detection, (29) 613.
 - determination in rapeseed cake, (37) 416.
 - effect on must and wine, (30) 612.
 - examination, (36) 319.
 - insecticidal value, (34) 359.
 - reducing power, (28) 504.
 - use in preparation of vaccine, (35) 380.
- oils, metabolism, (39) 668.
- Orobanchae on, (39) 146.
- prepared, examination, (26) 867.
- Sclerotinia libertiana affecting, (26) 647.
- seed, germination as affected by green manures, (33) 331.
- seed oil, physical constants, (35) 312.
- seeds as affected by disinfectants, (26) 820.
- seeds in feeding stuffs, (40) 637.

Mustard—Continued.

- seeds, phytin of, (32) 16.
- tokras disease, notes, (38) 351.
- tumbling, eradication, (33) 337.
- value in the diet, (29) 664.
- varieties, (26) 631; (29) 228; (31) 133.
- white—
 - as affected by lithium salts, (28) 526.
 - as cover crop, (32) 332; (37) 833.
 - as green manure, (32) 423; (34) 631; (40) 24.
 - culture for winter forage, (38) 735.
 - dormancy in seeds, (39) 225.
 - effect on milk and butter, (34) 570.
 - fertilizer experiments, (28) 820; (29) 632; (35) 325.
 - geotropism and phototropism in absence of oxygen, (39) 826.
 - germination tests, (30) 837.
 - notes, (30) 145.
 - selection experiments, (35) 334.
- wild—
 - analyses, (30) 565.
 - detection, (27) 499; (30) 207.
 - dissemination by farm animals, (26) 839.
 - eradication, (27) 536, 724; (30) 236; (31) 44, 133, 524, 633, 739; (34) 228; (36) 236, 535, 639; (37) 342; (39) 744.
 - eradication in potato fields, (33) 33.
 - germination in shade, (31) 235.
 - yield as affected by sulphur, (34) 726.

Mutation—

- and heredity as cell phenomena, (34) 823.
- and hybridization as independent phenomena (32) 326.
- in Egyptian cotton, (40) 237, 527.
- Oenothera, (33) 524; (39) 527, 632, 825.
- plants, treatise, (34) 629.
- sugar cane, (40) 634.
- sweet peas, (40) 541.
- lecture on, (28) 271.
- mass, in Oenothera, (40) 132.
- mass, in Zea mays, (39) 432.
- nature of, (33) 630.
- origin of species by, (30) 224.
- production through hybridization, (33) 758.
- review of literature, (33) 27.
- theory, notes, (28) 430.
- theory of De Vries, objections to, (32) 521.
- theory, treatise, (30) 432.

Mutational characters, relation to cell size, (40) 323.

Mutations in living beings, treatise, (26) 472.

Mutilla spp., notes, (34) 556.

Mutton—

- ash analyses, (29) 861.
- changes in during cold storage, (28) 365, 860.
- cold storage, statistics, (28) 869.
- composition and nutritive value, (34) 256.
- consumption in United States, (29) 770.
- cost of cold storage, (27) 164.
- cost of production, (29) 572.
- defrosting, (27) 470.
- dressing and preparation, (31) 75.
- exports from Australia, (33) 268.
- fat, digestibility, (34) 364.
- fat, digestion and absorption, (34) 257.
- finishing on silage, (26) 570.
- imports into Great Britain, (27) 470.
- nutritive value and digestibility, (29) 159.
- prices as affected by cold storage, (28) 871.
- prices in Ireland, (31) 96.
- production, (29) 469.
- recipes, (28) 860; (29) 159.
- storage in Philippines, (26) 262.
- tallow, determination in lard, (30) 110.
- tallow, solidifying and melting points, (34) 201, 202.
- tapeworm cysts in, (29) 886.
- Mya arenaria as human food, (35) 859.
- Mycolophthora sulphurea, optimum culture medium for, (29) 220.
- Mycelium, intercellular, staining, (26) 51.
- Mycolophagus castaneae, relation to chestnut black canker, (26) 551.
- Mycetaulus n.sp., notes, (34) 361.
- Mycetobia, notes, (36) 255.
- Mycetoma pedis, causative agent, (26) 281.
- Mycetophila—
 - merdigera n.sp., description, (39) 867.
 - spp., notes, (27) 57.

- Mycetophilid* larva, dipterous parasite of, (34) 553.
Mycetophilidae of North America, (27) 57, 661.
Mycobacterium enteritidis chronicae pseudotuberculosis bovis, isolating and cultivating, (26) 783; (28) 480.
Mycoderma cervisioe, effect on organic acids, (27) 526.
Mycodextran, studies, (33) 411.
Mycodiplosis—
 macgregori n.sp., description, (33) 859.
 pulvinariae n.sp., description, (27) 57.
Mycogalactan, studies, (33) 411.
Mycogone—
 cervina theobromae n.var., notes, (37) 148.
 perniciosa, description and treatment, (32) 50.
 sp., notes, (28) 241.
 sp., relation to rubber spotting, (29) 451.
Mycoidaea parasitica, notes, (40) 47.
Mycological—
 flora of Tunis, (32) 842.
 work, Schweinitz's (39) 30.
Mycology—
 bibliography, (29) 626; (30) 349; (33) 846.
 economic, scientific aspects, (28) 442.
 of water supplies and sewage, treatise, (30) 418.
 textbook, (38) 147.
Mycophenolic acid in corn, (29) 8.
Mycoplasma theory—
 investigations, (26) 341.
 notes, (27) 252.
 of Eriksson, (33) 448.
Mycorrhiza—
 ectotrophic and endotrophic, investigations, (30) 132.
 endotrophic, of *Ericaceae*, (39) 26.
 endotrophic, studies, (37) 129.
 fungal, cytology and physiology, (30) 826.
 on cranberry roots, (33) 341.
 on potatoes, (27) 224.
 relation to mucorineae, (27) 134.
Mycorrhizae—
 notes, (27) 851.
 of trees, review of investigations, (36) 527.
 of trees, studies, (31) 127.
Mycoses, treatise, (27) 882.
Mycosis, generalized, in cows, (30) 185.
Mycosphaerella—
 aurea n.sp., description, (37) 551.
 aurea, studies, (38) 546.
 bambusifolia n.sp., studies, (27) 154.
 brassicicola, notes, (32) 545; (34) 49, 542; (36) 145.
 citrullina, inoculation experiments, (29) 847.
 citrullina, notes, (27) 353; (30) 148, 845.
 coffea, notes, (30) 751; (32) 749.
 convexula, studies, (27) 547.
 eriodendr n.sp., description, (32) 749.
 fragariae, notes, (40) 158.
 grossulariae—
 notes, (37) 551.
 perfect stage of *Septoria ribis*, (36) 246.
 studies, (38) 546.
 hordicola n.sp., description, (38) 648.
 horii n.sp., notes, (39) 753.
 lageniformis n.sp., description, (27) 50.
 lethalis n.sp., description, (28) 845.
 n.sp., descriptions, (27) 149.
 nigerristigma n.sp., description, (32) 844.
 ontarioensis n.sp., life history, (33) 548.
 perseea n.sp., notes, (39) 248.
 phaseolorum n.sp., description, (35) 454.
 pinodes—
 life history, (33) 548.
 notes, (29) 645; (36) 249.
 relation to *Septoria pisi*, (29) 447.
 scutina, notes, (37) 550.
 sentina, investigations, (33) 347.
 sentina, relation to weather, (32) 842.
 sp., notes, (26) 850.
 (*Sphaerella*) *convexula*, notes, (26) 56.
 studies, (30) 537.
 virgaureae n.sp., description, (27) 51.
Mycotrophic—
 plants, nutrition physiology of, (28) 430.
 roots of different plants, reciprocal influence, (35) 654.
Mydaea spp., studies, (37) 764.
Mydas clavatus larvae, notes, (40) 653.
Myeloides cribrella, notes, (35) 463.
Myelophilus piniperda—
 in New Jersey, (34) 355.
 notes, (32) 550.
Myennis scutellaris, notes, (36) 657.
Myiarchus spp., feeding habits, (28) 57.
Myiasis—
 aurium accompanying radical mastoid operation, (31) 777.
 cutaneous, in man, (36) 359.
 dipterous larvae in, (32) 450.
 due to syrphid larvae, (39) 287.
 in cattle, notes, (29) 482.
 in man and animals, transmission by flies, (34) 359.
 in man, insect vector, (37) 357.
 intestinal, studies, (28) 780.
 of urinary passages, (32) 450.
 relation to cheese skipper, (31) 552.
 relation to flies, (30) 756.
Myiochanus spp., feeding habits, (28) 57.
Myiophasia—
 aenea, notes, (27) 864.
 revision, (34) 360.
 spp., notes, (36) 256.
Myiobris peruanus n.sp., description, (32) 658.
Myiobris saccatus, notes, (35) 364.
Myiobris n.sp., from Maryland, (38) 565.
Myiuridae—
 new, in eastern United States, (35) 263.
 of Australia, (28) 563; (39) 154.
Myobia ensifera, notes, (32) 353.
Myochrous—
 denticollis, investigations, (33) 358.
 longulus damaging cotton, (38) 61.
Myoma, diagnosis, (31) 877.
Myonyssus decumani, occurrence in Rhode Island, (29) 755.
Myopa, synopsis, (36) 255.
Myospila mediatubunda—
 notes, (30) 553.
 studies, (37) 764.
Myothermic apparatus, description, (32) 257.
Myricarias spp., descriptions, (31) 536.
Myriangium duriae—
 description, (33) 459.
 notes, (28) 453.
Myriapoda—
 British, check list, (40) 647.
 handbook, (30) 256.
 migrating armies of, (34) 364.
 of Kansas, (30) 759.
 species injurious to man, (39) 768.
 studies, (29) 58.
Myrica gale, root nodules of, (27) 25.
Myrioconium scirpi n.g. and n.sp., studies, (29) 345.
Myristic—
 acid, determination, (31) 508.
 acid salts, solubility, (35) 416.
 and lauric acids, separation, (35) 416.
Myristone, occurrence in alfalfa, (26) 802.
Myrmelachista ambigua—
 notes, (38) 558.
 ramulorum, notes, (29) 642, 652.
Myrmica scabrinodis sabuleti, embryology, (29) 860.
Myrobalan as rootstock, tests, (40) 445.
Myrobalans—
 as tanning material, (36) 509.
 season for collecting, (35) 317.
Myrtaceous plants, possibilities of, (35) 141.
Myrtillin, studies, (34) 709.
Myrtle-berry extract as an indicator, (40) 409.
Mystin, detection in milk, (26) 806.
Mytospodium alliorum, notes, (31) 539.
Mytilaspi—
 citricola, notes, (30) 853.
 pomorum, see *Oyster-shell* scale.
Mytilidion n.sp. on *Picea*, (34) 56.
Mytilus edulis as human food, (35) 859.
Myxofusciocum, new genus, description, (26) 845.
Myxomycetes—
 cytology of, (40) 726.
 sexuality in, (38) 331.
Myxosargus nigricornis n.sp., description, (40) 757.
Myxosporidia, filament extrusion, (40) 255.
Myxosporium—
 acerinum, description, (27) 450.
 corticolum, notes, (33) 348.
 sp., notes, (29) 49.
 spp., inoculation experiments, (27) 651.
Myzine sexincta, notes, (29) 58.

- Myzocallis pasaninae* n.sp., description, (34) 453.
Myzomela rubrata saffordi n.subsp., description, (37) 758.
Myzomyia rossii, midge parasite of, (26) 559.
Myzopsis n.g., description, (40) 60.
- Myzus**—
abietina, see *Aphis abietina*.
braggii and *Rhopalosiphum hippochoas*, confusion, (34) 357.
braggii in Louisiana, (40) 58.
 California species, (37) 158.
cerasi, see *Cherry aphid*.
dispar n.sp., description, (31) 157.
fragariae, notes, (30) 53.
godetiae n.sp., description, (37) 158.
persicae, see *Peach aphid*, green.
persicae-niger, see *Peach aphid*, black.
ribifolii n.sp., description, (37) 562.
ribis, see *Currant aphid*.
 spp., notes, (28) 854.
 spp. on Rosaceae, (32) 848.
whitei n.sp., description, (27) 758.
Nabis rufusculus, studies, (34) 853.
- Nacoleia octasema*, biology and remedies, (38) 59.
Naegleria gruberi, life history, (38) 556.
Naemosphaera chanousiana n.sp., notes, (37) 630.
- Nagana**—
 and dourine, differentiation, (30) 580.
 diagnosis, (27) 783.
 immunity to, (29) 380.
 in mice, treatment, (31) 284.
 infection, biological properties of spleen in, (30) 477.
 serodiagnosis, (31) 877.
 transmission by blood-sucking insects, (26) 150.
 trypanosomes, antigenic properties, (33) 282.
- Nails*, holding power, (36) 682.
- Nana* wood, notes, (29) 443.
- Napaeozapus insignis frutectanus* n.subsp., description, (40) 646.
- Naphthalin**—
 action in soil, (31) 620.
 as disinfectant for stored corn, (31) 849.
 as wood preservative, (27) 314.
 effect on plants, (33) 523.
 effect on refined tars, (26) 188.
 effect on seed germination, (26) 131.
 for gas engines, (30) 189, 190.
 insecticidal value, (32) 353; (39) 762.
 preparation, analyses, (38) 643.
- Naphthol* as soil disinfectant, (31) 621.
- β -Naphthol**—
 larvicidal value, (34) 359.
 methods of analysis, (33) 414.
- β -Naphthylamin**, larvicidal value, (34) 359.
- Naphthylamin*, nitrification in soil, (38) 119.
- Napicladium**—
calotropidis n.sp., description, (28) 449.
prosopodium n.sp., description, (37) 748.
- Napier fodder**—
 composition, (28) 873.
 composition and culture, (36) 230.
 notes, (30) 434.
- Napomyza chrysanthemi*, see *Chrysanthemum leaf miner*.
- Naras*, description, (29) 60.
- Narcissus**—
 autumn coloration of, (31) 34.
 blossom disease, notes, (28) 241.
 bulb disease, notes, (30) 354; (31) 646.
 bulb rot, studies, (39) 254.
 bulbs, culture experiments, (30) 145.
 bulbs, nematodes affecting, (36) 752.
 diseases, studies, (37) 47.
 fly, notes, (27) 53, 356, 359, 457; (30) 56, 458, 757; (31) 757.
 nematode diseases, (39) 57.
 nematodes affecting, (38) 455, 460.
 pseudonarcissus, carotinoid content, (31) 803.
- Narcosis**—
 and anaesthesia, (40) 778.
 in plants, studies, (27) 130.
 local and general, (34) 576.
- Narcotics**, effect on—
 development of eggs, (26) 772.
 germination of seeds, (36) 29.
 heliotropic sensitivity of seedlings, (31) 730.
 plants, (27) 826.
 seed germination, (26) 131.
- Narnia**—
 notes, (39) 361.
pallicicornis, notes, (28) 451.
- Narra* fruit, use as food, (27) 268.
- Nasonia brevicornis*—
 notes, (38) 466.
 parasite on sheep maggot flies, (32) 757.
- Nasturtium**—
 bacterial disease, studies, (30) 349.
 wilt, studies, (33) 744.
- Nasturtiums**—
 breeding experiments, (36) 838; (39) 746.
 fumigation with hydrocyanic acid gas, (33) 522.
- Natal grass**—
 culture in Philippines, (26) 361, 362.
 hay, analyses, (35) 339.
 notes, (35) 339.
 red, analyses, (27) 68.
 yields, (29) 224.
- National**—
 Academy of Sciences, (32) 697.
 Agricultural Society, (34) 799.
- Association**—
 for the Study of Pellagra, (33) 167.
 of Cement Users, (34) 685.
 of Commissioners of Agriculture, (39) 701.
 of State Universities, (32) 8.
 conference on—
 church and country life, (34) 297.
 marketing and farm credits, (35) 296.
 rural education, (36) 798.
 Congress of Horticulture, (36) 100.
 Congress of Viticulture at Pamplona, Spain, (35) 343.
 cooperative organization, notes, (38) 595.
 Corn Exposition, (28) 399; (30) 700.
 Council of Farmers' Cooperative Associations, (35) 296.
 Country Life Conference, (39) 701.
 Dairy Council, purpose and work of, (34) 472.
 Dairy Show, (35) 799.
 Drainage Congress, proceedings, (36) 186.
 Education Association, (29) 399; (33) 799; (35) 197.
 Education Association—
 agriculture at, (31) 498.
 at St. Louis, (26) 697.
 notes, (28) 700.
 Forest Reservation Commission, report, (37) 348.
 forests, see *Forests*, National.
 Formulary, (32) 875; (36) 378.
 forward-to-the-land league, (30) 792.
 Grange, Columbus, Ohio, meeting, (26) 1.
 Grange of Patrons of Husbandry, (40) 592.
 Institute of Agricultural Botany at Cambridge, (39) 700.
 Parks Conference, proceedings, (38) 543.
 Parks, conservation of game in, (38) 555.
 Potato Association, (37) 601.
 Research Council, (35) 599.
 Research Council, functions, (39) 604.
 Research Council, work of agriculture committee, (37) 4.
 School of Streams and Forests in France, (30) 495.
 Serum Institute of Holland, report, (29) 377.
- Natto*, preparation and analyses, (28) 360.
- Natural**—
 history of the farm, course in, (30) 897.
 history of the farm, treatise, (32) 493.
 resources of United States, (33) 490.
 science, technique, textbook, (32) 625.
 selection in beans, (29) 139.
 selection, notes, (26) 347.
 selection, treatise, (31) 865.
- Nature sketches in Temperate America*, book on, (26) 346.
- Nature study**—
 agricultural, address on, (27) 195.
 agricultural, notes, (32) 898, 899.
 and elementary agriculture in Georgia, (37) 194.
 bibliography, (32) 496.
 bulletin, (37) 598.
 collections for schools, (30) 696.
 course for teachers, (29) 298.
 course in, (27) 96; (32) 596; (35) 797; (37) 395; (40) 493, 898.
 exhibition of Los Angeles schools, (32) 691.
 exhibits by rural schools, (31) 899.

Nature study—Continued.

- for teachers, (35) 92.
- for teachers, treatise, (33) 397.
- forestry in, (26) 193, 392.
- in agricultural teaching and social center work, (31) 896.
- Denmark, (31) 598.
- elementary schools, (29) 394; (31) 193, 194, 493, 599.
- Geneseo schools, Illinois, (34) 899.
- graded schools, (33) 790; (34) 597; (35) 896; (36) 395.
- New York State College of Agriculture, (34) 692.
- normal schools, (38) 195.
- normal schools, colleges, and universities, (32) 690.
- public schools, (27) 694; (32) 493.
- United States, (33) 896.
- Wisconsin, (35) 796.
- lessons in, (28) 593, 694; (29) 395; (30) 496.
- manual, (26) 297, 298; (29) 495; (34) 599; (40) 898.
- mechanical aids, (30) 299.
- organization of, (35) 796.
- outlines, (30) 94; (33) 298, 598; (34) 794, 795.
- pamphlet, (28) 298.
- papers on, (33) 296.
- relation to agricultural instruction, (31) 194.
- relation to school gardens, (27) 298.
- teaching, (28) 491; (31) 395, 792; (32) 394.
- textbook, (33) 95; (38) 196.
- training for teachers, (34) 692.
- treatise, (28) 897.
- value of, (32) 693.

Naval stores—

- from Florida National Forest, (31) 744.
- from western pines, (28) 146.
- industry, (33) 543.

Navel-ill, *see* Joint-ill.

Navelicular bursa, open, relief, (27) 576.

Navigation, regulation and conservation in United States, (27) 188.

Nebraska—

- Corn Improvers' Association, report, (29) 534, 633.
- Forestation Commission, report, (34) 347.
- State Board of Irrigation, Highways, and Drainage, rules, (27) 86.
- Station, financial statement, (28) 299; (29) 793.
- Station, notes, (26) 194, 695; (27) 198, 397, 493, 698; (28) 94, 195, 797; (29) 97, 397, 795; (30) 95, 497, 600, 698; (31) 100, 398, 497, 797; (32) 599; (33) 99, 600; (34) 798; (35) 300, 399, 597, 798; (36) 99, 500, 698, 797; (37) 197, 897; (38) 198, 499, 600, 798; (39) 500; (40) 398, 697.
- Station, report, (28) 299; (29) 793; (31) 495; (34) 294; (35) 696; (38) 298; (39) 598.
- University, notes, (26) 194, 494; (27) 198, 493, 698; (28) 94, 495, 697; (29) 97, 397, 795; (30) 95, 698; (31) 100, 398, 497, 797, 900; (32) 599, 695; (33) 99, 198, 496, 600, 795; (34) 198, 396, 798; (35) 300, 399, 597, 798; (36) 99, 500, 797; (37) 197, 600, 897; (38) 97, 198, 499, 600, 798; (39) 96, 300; (40) 398, 697.

Necator americanus, dissemination by flies, (30) 659.

Necrobacillosis—

- definition, (33) 774.
- in cattle, (29) 500.
- goats, (31) 86.
- hogs, (39) 590; (40) 783.
- horses and mules, (40) 186.
- sheep, (29) 783.
- relation to hog cholera, (39) 589, 590.
- umbilical, in lambs, (34) 188.

Neorobia rufipes—

- infesting cotton bales, (26) 560.
- notes, (28) 161.

Neorobiosis in plants, studies, (28) 429.

Neurology, (39) 200, 400, 900; (40) 800.

Neurosis bacillus, studies, (28) 676; (29) 478.

Necrotic ulcers of the tongue, (40) 283.

Nectandra rodiaei—

- durability tests, (34) 56.
- notes, (28) 544; (36) 745.

Nectar—

- secretion, studies, (37) 633.
- vitamin content, (40) 564.

Nectarine—

- brown rot, treatment, (40) 851.
- pollen, viability, (32) 534.
- tree disease, notes, (31) 539.

Nectarines—

- composition as affected by irrigation, (29) 236.
- correlation between flower and fruit, (29) 424.
- drying, (27) 146; (37) 114.
- fruit stocks for, (38) 345.
- pollination experiments, (34) 233.
- pruning, (32) 837.

Nectarophora—

- pisi, remedies, (30) 654.
- solanifolii, notes, (28) 554.

Nectria—

- bainii hypoleuca n. var., notes, (37) 148.
- bainii, notes, (29) 548, 749.
- cancrini n. sp., description, (31) 750.
- cancrini, studies, (33) 650.
- castilloae n. sp., description, (35) 45.
- cinnabarina—
 - in black knot cankers, (32) 52.
 - notes, (26) 57; (33) 647; (35) 456.
 - on mulberry, (33) 54.
 - studies, (27) 49; (36) 751.
- cucurbitula, relation to fir withertip, (35) 850.
- ditissima—
 - as wound parasite of fruit trees, (33) 853.
 - description, (27) 152.
 - mode of attack, (37) 253.
 - notes, (26) 446; (28) 446; (32) 445, 547; (33) 348; (34) 247; (38) 452; (39) 150.
 - notes and treatment, (29) 49.
 - occurrence in Maine, (31) 151.
- diversispora on tea, (39) 452.
- galligena—
 - in Quebec, (32) 544.
 - in United States, (30) 537.
 - notes, (26) 448.
- graminicola, notes, (29) 47, 445.
- graminicola, relation to Fusarium nivale, (30) 846.
- ipomoeae, notes, (32) 343.
- ipomoeae, relation to sweet potato stem rot, (29) 647.
- laurentiana, notes, (29) 647.
- laurentiana on sugar cane, (40) 157.
- n. spp., descriptions, (31) 242.
- rubi n. sp., notes, (26) 450.
- rubi, studies, (34) 352.
- sp. on Norway maple, (34) 157; (38) 253.
- sp. on sugar cane, (37) 553.
- spp., notes, (27) 51, 546.
- spp. on cacao, (34) 540; (35) 353.
- spp. on pear, (40) 251.
- spp., parasitism, (27) 46.
- stem canker of Acacia decurrens, (33) 545.
- studies, (30) 537.
- theobromae, notes, (29) 155.
- vanillae, description, (27) 450.

Nectriaceae, studies, (31) 242, 343.

Nectriella—

- cucumeris, n. sp., description, (29) 245.
- miltna on Agave, (40) 844.
- Necydalis ulmi, notes, (30) 455.
- Neda sanguinea, notes, (33) 860.
- Neem cake, fertilizing value, (26) 631; (38) 220.

Negri bodies—

- detection, (26) 280.
- in animals, (35) 75.
- in rabies, (29) 379.
- occurrence, (39) 588.
- photomicrographs of, (29) 478.
- structure simulating in brain of guinea pigs, (28) 584.

Negro—

- girls, homemakers' clubs for, (33) 299.
- problem in the South, (26) 592.
- rural schools, practical training in, (32) 289.

Negroes—

- agricultural and industrial education, (38) 92.
- as farm laborers and share tenants, (32) 489.
- county training schools for, (38) 397.
- in United States, (33) 395.
- land ownership in Virginia, (36) 392.
- Neighborhood improvement clubs, notes, (28) 194.
- Nelsonite, utilization, (29) 519.

Nematocera—

- blood-sucking, of Brazil, (29) 54.
- of British India, treatise, (29) 57.
- of Venezuela, (27) 862.

Nematode—

- galls, descriptions, (39) 868.
- injury, neutralizing, (28) 845.
- new, in rats, (30) 279.

Nematode—Continued.

- new parasitic, (38) 147.
 - parasites, fourth molt of, (28) 759.
 - parasites of the dog, (30) 279; (40) 89.
- Nematodes—*see also* Heterodera.
- anatomy and life history, (32) 341, 759.
 - and their relationships, (33) 250.
 - associated with bark beetles, (33) 750.
 - control, (39) 461.
 - counting in soil, (33) 56.
 - culture, (32) 49.
 - destruction with calcium cyanamid, (37) 453.
 - embryology, (30) 555.
 - foliar, notes, (28) 854.
 - free-living, of Switzerland, (35) 460.
 - free-living predatory, in soils and water, (38) 254.
 - giant, in abdominal cavity, (37) 281.
 - giant, in liver of a dog, (36) 681.
 - heteroxenous, larval forms, (37) 361.
 - identification, (33) 459.
 - in Brazil, (30) 857.
 - butterfish in relation to sale warranty, (36) 662.
 - connective tissue of bovines, (28) 81.
 - crop of chickens, (40) 587.
 - digestive tract, treatment, (34) 576.
 - Philippines, (37) 277.
- injurious—
- in Switzerland, (38) 350.
 - to bananas, (30) 652.
 - beets, (27) 151, 152, 352; (28) 547; (30) 244.
 - black currant, (37) 843.
 - citrus fruits, (32) 238.
 - citrus trees, (30) 51.
 - clover, (29) 446.
 - coffee, (26) 750; (32) 646; (34) 55.
 - Conostegia subhirsuta, (28) 658.
 - dashens, (37) 841.
 - ginseng, (32) 641.
 - golden seal, (31) 345.
 - horses, (26) 384.
 - hyacinth bulbs, (31) 450.
 - lily-of-the-valley, (31) 56.
 - muskrats, (29) 484.
 - narcissus bulbs, (36) 752.
 - oats, (28) 149, 346; (30) 649; (32) 750.
 - oranges, (34) 354.
 - ornamental plants, (34) 249.
 - pepper, (28) 746; (37) 249.
 - pineapples, (37) 652.
 - pinks, (35) 154.
 - plants, (28) 242; (36) 52, 150.
 - potatoes, (26) 748; (33) 849; (40) 51.
 - rice, (30) 845; (31) 145, 641.
 - sheep and cattle, (28) 481.
 - sugar beets, (31) 747; (33) 851.
 - sugar cane and bananas, (34) 50.
 - tomatoes, (26) 649; (28) 654; (30) 245; (31) 52.
 - vegetables, (36) 349.
 - wheat, (30) 243; (38) 850.
- intestinal, bibliography, (31) 679.
- intestinal, fixation and nutrition of, (31) 679.
- intra-vitam color reactions, (38) 357.
- new genera, descriptions, (30) 648.
- notes, (30) 448, 746; (32) 448, 651; (35) 45.
- of pharynx and esophagus of chickens, (31) 287.
- of ruminants, transmissible to man, (36) 577.
- parasitic—
- in birds, (31) 184.
 - equines, (27) 583.
 - fowls, (31) 184.
 - mammals, (36) 753.
 - olive weevil, (32) 453.
 - sheep, (34) 275; (35) 78.
 - on locusts, (30) 546.
 - on plants, (34) 841.
- parasitism, (30) 647.
- rearing on agar, (33) 547.
- relation to leaf spot of cereals, (29) 47.
- relation to potato scab, (32) 443.
- reproduction in artificial media, (40) 267.
- review of studies, (31) 154; (32) 347.
- segmentation in, (38) 254.
- technique, methods, (37) 549.
- treatment, (26) 845; (29) 151; (30) 351, 449; (31) 549; (32) 578, 641, 843; (34) 245, 780; (37) 652; (38) 555.

Nematodirus—

- filicollis, life history, (34) 187.
 - rosicidus, destructive to deer, (26) 653.
- Nematology, notes, (33) 681.
- Nematospory lycopersici n.sp., description, (37) 842.
- Nematus—
- erichsonii—
 - biology, (33) 746.
 - biology and remedies, (28) 658.
 - fungus parasite of, (26) 63.
 - notes, (27) 53, 460, 552; (29) 252; (30) 362, 845; (32) 754; (35) 54.
 - parasites of, (32) 352.
 - ventricosus, notes, (27) 460.
- Nemorilla maculosa, notes, (35) 659.
- Neobeckia aquatica as affected by environment, (36) 523.
- Neoborus amoenus, notes, (36) 551; (40) 753.
- Neocatolaccus—
- livii n.sp., description, (36) 556.
 - syphidii n.sp., description, (36) 556.
- Neocelatoria ferox n.g. and n.sp., description, (31) 352.
- Neocerata rhodophaga, *see* Dasyneura rhodophaga.
- Neocosmospora—
- notes, (29) 444.
 - vasinfecta—
 - notes, (35) 44; (40) 845.
 - on potato and adzuki bean, (36) 450.
 - psi, studies, (36) 749.
 - studies, (32) 546.
- Neocremastus n.g. and n.sp., description, (38) 660.
- Neoderostenus, occurrence in North America, (36) 556.
- Neodichocera tridens n.g. and n.sp., description, (35) 259.
- Neodiprion n.g. and n.spp., descriptions, (40) 761.
- Neofabrea malicorticis—
- description, (29) 153.
 - n.sp., description, (27) 649.
 - notes, (31) 53.
 - temperature relations, (36) 649.
- Neolasioptera hibisci, studies, (40) 754.
- Neolygus nyssae n.sp., description, (40) 353.
- Neomphaloidomyia n.g. and n.spp., descriptions, (38) 768.
- Neopeckia coulteri—
- new hosts for, (33) 550.
 - notes, (30) 152; (31) 845; (33) 351; (34) 56.
 - spore variation in, (36) 651.
- Neophasia menapia, notes, (26) 863.
- Neopius carinaticeps n.g. and n.sp., description, (38) 165.
- Neoplasms, transplantable, immunity to, (38) 580.
- Neorhizobius n.spp., studies, (38) 464.
- Neosalvarsan—
- action on swine erysipelas, (39) 590.
 - fixation by blood, (35) 74.
 - notes, (27) 680.
 - qualitative and quantitative tests, (39) 508.
 - toxicity, (38) 181.
 - use against—
 - contagious pneumonia, (32) 682.
 - epizootic lymphangitis, (28) 784.
 - influenza in horses, (33) 286.
 - pectoral influenza, (30) 285.
- Neosciara n.g. and n.spp., descriptions, (40) 858.
- Neosigniphora—
- elongata n.sp., description, (35) 760.
 - nigra, n.sp., description, (29) 359.
- Neotetrastichus n.g. and n.spp., descriptions, (27) 554.
- Neotoma—
- cinerea lucida n.subsp., description, (37) 757.
 - fuscipes mohajensis, injuring pines, (38) 53.
- Neottiospora yuccaeafolia n.sp., description, (33) 545.
- Neoxabea bipunctata, studies, (33) 653.
- Neozimmermannia (Gloeosporium) elasticae, notes, (38) 153.
- Nepa apiculata, death feigning, (27) 457.
- Nepa cinerea, parasitic in dog flea, (33) 862.
- Nephelin—
- as source of potash, (30) 216.
 - decomposition by soil bacteria and yeast, (31) 121.
 - fertilizing value, (27) 125, 725; (29) 625.
 - potash, solubility, (34) 328.
- Nephelite, extraction of potash from, (27) 323.
- Nephelometer, description, (30) 410; (31) 114.
- Nephelometer-colorimeter, description, (37) 205.

Nephelometry—

- in study of nucleases, (32) 310.
- review of investigations, (34) 202.
- studies, (39) 311.

Nephoscope, Besson, notes, (30) 17.

Nephrotetix bipunctatus, studies, (39) 862.

Nephritic affections in domestic animals, pathology, (27) 576.

Nephritis—

- acute, renal epithelium in, (27) 79.
- in the hen, (39) 190, 393.
- respiratory metabolism in, (37) 267.
- specific purulent, of Equidae, (26) 173.
- spontaneous, in wild rats, (27) 884.
- tartrate, *see* Tartrate nephritis.

Nephrolepis, variation in, (35) 227; (36) 434.

Nephroparatyphoid and nephrottyphoid, notes, (32) 374.

Nepiera benevola—

- fuscifemora n. var., description, (38) 165.
- fuscifemora, notes, (36) 655.
- n. sp., description, (35) 262.

Nephtula—

- plagicolella, notes, (26) 558.
- sericopeza, notes, (29) 759.
- slingerlandella, life history, (27) 456.
- slingerlandella, studies, (26) 557.

Nephtulidae of North America, (37) 564.

Neptunia prostrata as affected by seasonal humidity, (31) 221.

Neradol, notes, (30) 16.

Nereocystis leutkeana—

- analyses, (27) 422.
- as source of potash, (26) 726.
- distribution, (29) 322.

Nerve—

- degeneration in fowls fed on unhusked rice, (32) 579.

- fiber, chemical changes in, (29) 466.

Nervous system—

- and internal secretions, (30) 201.
- and metabolism, relationship, (28) 765.

Nesococcus n. g. and n. sp., description, (36) 551.

Nest eggs, tests, (37) 70.

Nesting habits of the hen, (40) 77.

Nests, trap—

- construction, (27) 279, 374; (33) 473; (35) 792.
- description and use, (33) 90.
- for poultry, (33) 473.
- notes, (30) 197.
- records, error in, (26) 572.
- value in poultry breeding, (26) 572.

Nettle—

- as a textile, (40) 35.
- fiber from India, (39) 442.

Neurobathra strigifinitella, studies, (33) 656.

Neurocolpus nubilus, notes, (30) 852; (36) 456.

Neurotoid insects of Philippines, (36) 656.

Neuroterus saltatorius, notes, (30) 657.

Nevada—

Station—

- financial statement, (29) 194.
- notes, (26) 695; (27) 300, 397; (28) 797, 900; (29) 300, 900; (30) 95, 397; (31) 497; (32) 94, 397, 695, 900; (33) 795; (34) 396, 496, 600; (35) 96, 399, 795; (36) 695; (37) 97, 498, 897; (38) 299, 400, 900; (39) 96, 399; (40) 398, 600.
- report, (31) 98; (33) 698; (36) 97; (37) 95; (39) 196.
- report of director, (29) 194.

- University, notes, (27) 300, 397; (28) 397, 797, 900; (29) 300, 900; (30) 95, 397; (31) 100, 497; (32) 94, 397, 900; (33) 795; (34) 396; (36) 196, 695; (37) 97, 498; (38) 299, 400; (40) 398.

Névé and atmosphere, aqueous exchange between, (38) 812.

New Hampshire—

- College, notes, (26) 396; (27) 198, 397, 493, 698; (28) 900; (29) 98, 699; (30) 797; (31) 600, 797; (33) 700; (34) 97; (35) 597, 900; (36) 99, 295; (37) 97, 197, 498; (40) 600.

- Station, financial statement, (29) 793.

- Station, notes, (27) 198; (29) 699; (31) 398, 600; (33) 700; (35) 900; (36) 997.

- Station, report of director, (29) 793.

New Jersey—

- College, notes, (26) 300; (27) 99, 799; (28) 195; (29) 498; (30) 397; (31) 398; (32) 600, 797; (33) 900; (34) 97, 295, 496, 798; (35) 698; (36) 599, 695, 797; (37) 98, 197, 498; (38) 97; (39) 599, 697; (40) 297, 697.

New Jersey—Continued.

State University, notes, (36) 695

Stations—

- financial statement, (27) 798; (28) 796.
- notes, (26) 300, 695; (27) 99; (28) 195, 697; (29) 498; (30) 397; (32) 600, 695, 797; (33) 900; (35) 97, 300, 698, 900; (36) 196, 599, 797; (37) 98, 197, 498; (38) 97; (39) 599, 697; (40) 297, 697.
- report, (30) 395; (31) 196, 398; (32) 598; (34) 197; (36) 898; (39) 799; (40) 198, 797.
- report of director, (27) 798; (28) 796.

New Mexico—

- College, notes, (26) 396, 695; (27) 99, 699; (28) 397, 495, 698; (29) 196, 398; (30) 300, 397; (31) 197, 497, 696, 900; (32) 497; (33) 300, 795; (34) 600; (35) 96; (36) 99, 695, 899; (39) 198, 697; (40) 298.
- State engineer, report, (36) 284.

Station—

- financial statement, (27) 492; (28) 899.
- notes, (26) 396, 695; (27) 99, 699; (28) 397, 495; (29) 398; (30) 300, 397; (31) 197, 497, 696, 794; (32) 397, 497; (33) 300, 795; (34) 600; (35) 96; (36) 99, 695, 899; (38) 299, 799; (39) 198, 697; (40) 298.
- report, (32) 693; (34) 795; (37) 95; (38) 698.
- report of director, (27) 492; (28) 899.

New York—

Cornell Station—

- financial statement, (26) 795; (28) 899.
- notes, (26) 397, 900; (27) 99, 493, 699; (28) 195; (29) 196, 398; (32) 695; (33) 198; (35) 97, 197, 399, 798; (37) 98, 498, 600; (38) 699; (39) 96 (40) 199.
- report, (30) 899; (32) 899; (34) 795; (37) 298; (39) 196; (40) 694.
- report of director, (26) 795; (28) 899.

Department of Foods and Markets, work of, (34) 490.

Food Investigating Commission, (29) 868.

Produce Exchange, report, (37) 891.

State—

- Agricultural Society, (34) 288.
- Agricultural Society, proceedings, (31) 894.
- College of Agriculture, history, (32) 896.
- engineer and surveyor, report, (36) 183, 284.

State Station—

- financial statement, (26) 299; (28) 194; (29) 899.
- guide to buildings and grounds, (34) 95.
- notes, (26) 397, 695; (27) 398; (28) 397; (29) 196; (30) 397, 699; (31) 300; (32) 95; (34) 97, 199, 600; (35) 97, 197, 400; (37) 197, 299, 797; (38) 299, 400.
- report, (29) 899; (30) 899; (32) 693, 796; (34) 197; (35) 94; (37) 396; (38) 95; (39) 93; (40) 97, 599.
- report of director, (26) 299, 692; (28) 194, 695.

State Vegetable Growers' Association, (32) 688.

State Veterinary College, report, (36) 675, 676.

New Zealand standard time, (38) 811.

Newark Housekeepers' Insurance Company, (32) 459.

Nezara—

- hilaris injurious to peaches, (32) 247.

- hilaris, studies, (37) 258.

viridula—

- notes, (28) 654; (30) 356; (37) 55; (40) 165.
- relation to pecan kernel spot, (39) 763.
- studies, (39) 558.

Nicine, tests, (30) 156.

Nickel—

- as growth stimulant for hemp, (33) 432.
- chlorid, effect on olives, (26) 825.
- cooking utensils, usefulness, (33) 68.
- cooking vessels, solubility, (32) 561.
- in hydrogenated oils, (34) 10.
- in lard substitute, (29) 459.
- in soils, (31) 720.
- metallic, effect on *Aspergillus niger*, (30) 824.
- solubility, (32) 763.
- toxic effect on plants, (38) 628.

Nicotiana—

- abnormalities in, (29) 321; (30) 826; (40) 226.
- abscission in, (39) 226.
- blossom color inheritance, (40) 442.
- breeding experiments, (27) 741.
- controlled pollination in, (40) 131.
- factors affecting flower size in, (34) 225.
- fecundating stimuli and mutation in, (33) 533.
- hereditary reaction systems, (36) 521.

- Nicotiana**—Continued.
 hybridization experiments, (30) 329, 330.
 hybrids—
 inheritance in, (28) 530; (37) 433.
 inheritance of flower size in, (29) 216.
 sterility in, (37) 225.
 studies, (29) 320.
 inheritance in, (36) 629.
 inheritance of size in, (35) 819.
 parthenogenesis—
 and parthenocarp in, (33) 435.
 in, (30) 224.
 parthenocarp, and phenospermy in, (34) 136.
 rustica, immunity to gummosis, (28) 446.
 self-sterility in, (38) 823.
 spp., hybridization experiments, (27) 428.
 spp. hybrids, studies, (27) 230.
 studies, (28) 530.
 tabacum, correlation and inheritance in, (27) 535.
 tabacum, cytokinesis of pollen mother cells, (40) 518.
 tabacum, inheritance of characters in, (30) 29.
 variation of flower size in, (33) 435.
 viscosum, mosaic disease of, (36) 451.
- Nicotin**—
 as by-product of tobacco culture, (32) 137.
 content of tobacco plants, (29) 503.
 detection on sprayed plants, (38) 56.
 determination, (27) 14; (29) 810; (31) 613, 714.
 determination in—
 insecticides, (32) 296.
 presence of pyridin bases, (26) 316.
 tobacco, (26) 412; (28) 412; (37) 14.
 tobacco extracts, (26) 412, 413, 510, 511.
 distribution in tobacco plant, (26) 333.
 effect on larvae of eudemis moth, (26) 860.
 effect on plant growth, (37) 632.
 emulsion for, (37) 760.
 extraction from tobacco, (29) 118.
 extracts, preparation on the farm, (32) 158.
 in tobacco compounds, analyses, (26) 714.
 insecticidal value, (30) 737; (36) 152.
 oleate, preparation and insecticidal value, (39) 462.
 oxalate, use on tobacco, (26) 638.
 paraffin emulsion, use, (39) 763.
 preparations, analyses, (27) 441.
 preparations, combining with spray mixtures, (34) 158.
 solutions, aqueous, concentration and optical rotatory power, (37) 14.
 sprays, use with soap, (40) 752.
 sulphate—
 as codling moth ovicide, (38) 860.
 insecticidal value, (37) 559, 660.
 sprays, tests, (40) 161, 162.
 sprays, wetting power and efficiency, (36) 455.
 use with Bordeaux, (34) 61.
 variation in tobacco plant, (27) 830.
- Nicotina**, analyses, (26) 65.
- Nicotinic acid**—
 in rice bran, (29) 263; (31) 714.
 in rice polishings, (33) 167.
- Nidorella auriculata**, analyses and digestibility, (27) 871; (32) 167.
- Nigella**, floral anomalies in, (29) 629.
- Niger**—
 cake, analyses, (30) 176.
 cake, digestibility, (28) 464.
 cake, feeding value, (26) 267, 673; (30) 176.
 seed cake, analyses, (27) 670.
 seed cake, effect on milk and butter, (34) 570.
 seed plant, culture for seed, (37) 230.
- Night soil**—
 analyses, (30) 26; (33) 23, 723.
 fertilizing value, (26) 631; (27) 337; (35) 323; (38) 624; (39) 817.
 microorganisms, effect on soil productivity, (27) 722.
 preservation, (29) 731.
 treatment with manganese chlorid, (26) 425.
- Night temperature**—
 increase with height, (40) 314.
 relation to humidity, (40) 715.
 studies in Roswell fruit district, (40) 117.
- Night wells**, formation, (30) 511.
- Nigredo**—
 caryophyllina, internal uredinia of, (35) 635.
 fallens, aecial stage on red clover, (37) 752.
- Nile**—
 flood of 1912, (33) 510.
 river delta, fertility map of, (31) 119.
 silt, (40) 620.
 water, fertilizing value, (28) 514.
- Nili maize**, fertilizer experiments, (38) 233.
- Ninebark borer**, notes, (28) 155.
- Ninhydrin reaction**, relation to age and habits of individuals, (33) 876.
- Nipa palm**—
 alcohol from, (29) 414.
 fiber, tests, (31) 526.
 sap, studies, (30) 16.
- Nippon river fever**, see *Tsutsugamushi*.
- Nipponorthezia**, new genus, description, (37) 358.
- Nishiyana n.g. and n.sp.**, description, (38) 857.
- Nisotra uniformis** on cotton, (40) 256.
- Niter**—
 cake, effect on barley, (40) 515.
 cake in superphosphate manufacture, (40) 221.
 soils, reclamation, (38) 323.
 spots in cultivated soils, (32) 29.
 spots in soils, origin, (33) 121; (34) 811, 812; (35) 724.
 spots in western soils, origin, (36) 423.
- Nitocris**—
 princeps, notes, (31) 61; (32) 847.
 usambicus, notes, (26) 253.
- Nitragin**—
 notes, (26) 723; (27) 322.
 tests, (26) 123, 322, 521; (27) 322; (28) 426; (29) 733.
- ρ -Nitratin**, insecticidal value, (34) 359.
- Nitrate**—
 content of—
 arable soils, fluctuation in, (30) 716.
 dried soils (32) 817.
 soils as affected by fallowing, (26) 421.
 soils as affected by tillage methods, (40) 719.
 soils, relation to wheat yield, (40) 719.
 deposits—
 descriptions and origin, (28) 522.
 in California, (28) 424.
 Chile, (27) 519; (28) 522; (29) 517.
 Idaho and Oregon, (34) 220.
 United States, (27) 22; (28) 522.
 origin, (31) 724.
 diphasphate, fertilizing value, (34) 327.
 exports from Chile, (30) 626.
 ferment, studies, (32) 523; (33) 726.
 industry in—
 Chile, (26) 425; (27) 24, 519, 723, 727; (31) 724; (33) 326; (37) 217.
 Germany, history, (28) 625.
 Norway, (29) 126.
 of ammonia, see *Ammonium nitrate*.
 lime, see *Calcium nitrate*.
 potash, see *Potassium nitrate*.
 soda, see *Sodium nitrate*.
 phosphate, fertilizing value, (28) 520.
 salts, industry in India, (37) 722.
 shales, analyses, (29) 318.
 supply in United States, (38) 817.
- Nitrates**—
 absorption by corn and lupine seedlings, (35) 435.
 absorption by legumes, (36) 329.
 accumulation as affected by green manuring, (33) 721.
 accumulation in soils, (38) 211; (39) 323.
 analyses, (34) 222.
 and nitrites, determination, (40) 309.
 artificial, production and use, (29) 517.
 assimilation, (30) 824; (32) 223.
 assimilation by—
 mold fungi, (31) 223.
 plants, (27) 332; (28) 526; (30) 219.
 soil microorganisms, (26) 617.
 Streptothrix, (27) 621.
 atmospheric, accumulation and utilization in soils, (30) 325.
 bacterial destruction of, (31) 819.
 behavior in cultivated soils, (27) 626; (28) 521, 723; (29) 515.
 circulation in soils, (28) 720; (30) 623.
 detection, (27) 8; (33) 804.
 detection in milk, (31) 508.

Nitrates—Continued.

- detection in sewage, (32) 115.
- detection in water, (26) 511.
- determination, (26) 108, 204; (27) 111, 497; (33) 501.
- determination in—
 - alkali soils, (31) 206.
 - presence of chlorids, (37) 504.
 - soils, (28) 610; (29) 610, 797; (31) 516; (34) 112, 811; (37) 111.
 - water, (26) 110; (28) 19, 509; (37) 506.
- effect on—
 - apples, (29) 438.
 - composition of sugar beets, (26) 196; (31) 435.
 - decomposition of sewage, (26) 725.
 - development of root tubercles, (35) 634.
 - nitrogen-assimilating bacteria, (38) 724.
 - nodule production, (32) 727; (33) 134; (37) 133; (39) 338.
 - oat seedlings, (31) 231, 528.
 - quality of sugar beets, (28) 43.
 - extraction from soils, (26) 524.
 - fertilizing value, (30) 326; (39) 726.
 - flocculating power on clay, (27) 620.
- formation—
 - from peat nitrogen, (29) 624.
 - in acid soils, (36) 22.
 - cultivated soils, (26) 319.
 - forest soils, (30) 624.
 - moor soils, (30) 325.
 - presence of carbohydrates, (34) 127.
 - puddled soils, (31) 127.
 - soil in relation to weeds, (38) 814.
 - soils, (27) 721; (29) 818.
 - soils after freezing, (30) 23.
 - Virginia soils, (30) 516.
- in acid soil, studies, (40) 620.
- chernozem soils, (34) 618.
- Colorado soils, (29) 819; (31) 619.
- orchard soils, (36) 724.
- rain and snow, (40) 19.
- soil, determination, (40) 506.
- soils, (26) 723; (27) 419.
- soils as affected by soil moisture and manure, (36) 816.
- leaching from pervious soils, (37) 23.
- leaching in soils in winter, (36) 119.
- localization in plants, (30) 30.
- loss from soil, (29) 815.
- loss from soil as affected by plant residues, (40) 121.
- loss from soil as affected by sugars, (40) 122.
- loss in drainage water, (26) 421.
- manufacture, (28) 424.
- manufacture—
 - from peat, (31) 321.
 - from the air, (27) 420; (28) 818; (33) 25.
 - inefficiency in, (32) 322.
- movement in soils, (28) 813; (36) 118.
- nitrite formation from, in aqueous solution by sunlight, (40) 425.
- origin and distribution in soils, (29) 621.
- production by *Azotobacter*, (31) 421.
- production in Chile, (32) 517.
- reduction—
 - by bacteria, (31) 324.
 - Streptothrix*, (27) 621.
 - yeasts and molds, (33) 726.
- in cultivated soils, (40) 319.
- Nebraska soils, (29) 734.
- plant cells, (28) 428.
- sterilized soils, (31) 121.
- of, (26) 507.
- without anaerobic conditions, (31) 127.
- relation to cultural practices and plant growth, (37) 813.
- relation to sodium carbonate formation in soils, (28) 719.
- role in plant nutrition, (26) 625.
- Schloesing, fertilizing value, (33) 25.
- synthetic, manufacture by electricity, (38) 122.
- titration with ferrous sulphate, (34) 203.
- transformation by soil microorganisms, (38) 723.
- use in Europe and Egypt, (27) 727.
- use in United States, (27) 727.
- utilization by pea seedlings, (27) 730.
- utilization by plants, (35) 28.

Nitribacillus—

- oligotrophus, notes, (32) 523.
- polytrophus, notes, (32) 523.

Nitric acid—

- action on aluminum, (35) 802.
- assimilation by plants, (30) 30, 31.
- destruction of stumps by, (28) 485; (31) 92.
- detection in presence of nitrous acid, (28) 19.
- detection in watered fruit juices, (27) 411.
- determination, (27) 609; (32) 115.
- determination in foods, (29) 809.
- determination in presence of nitrous acid, (31) 503.
- effect on—
 - action of maltase, (28) 504.
 - bread fermentation, (27) 268.
 - plants, (37) 224.
- in rain water, (31) 812; (33) 617.
- industry, status, (27) 128, 519.
- manufacture, (28) 424; (30) 427; (31) 822.
- manufacture from ammonia, (29) 517; (30) 721.
- manufacture from the air, (27) 623; (28) 221; (29) 822.
- physical and chemical data, (40) 607.
- production from synthetic ammonia, (38) 710.
- synthetic, manufacture and use, (35) 428.
- toxicity, (28) 662.
- use on alkali soils, (28) 814.

Nitric—

- compounds, inorganic, behavior in sunlight, (30) 824.

nitrogen—

- determination, (36) 504.
- in country rock, (22) 28; (36) 423; (37) 518.
- in soil, influence of salts on, (40) 722.

Nitrids industry, status, (27) 128, 519.

Nitrification—

- and soil toxins, studies, (38) 322.

as affected by—

- alfalfa and timothy, (29) 317.
- alkali salts, (38) 322.
- calcium carbonate, (40) 723.
- carbon, (27) 322.
- carbon dioxide gas, (39) 618.
- carbon disulphid and toluol, (30) 717; (40) 513.
- copper salts, (29) 529.
- crops and fertilizers, (35) 321.
- ether, (27) 131.
- ground limestone, (27) 422.
- gypsum, (26) 527.
- humus-forming materials, (35) 216.
- irrigation and crop production, (31) 119.
- lime-magnesia ratio, (32) 720.
- liming, (26) 428.
- manganese, (34) 623; (37) 126.
- metallic salts, (31) 120.
- organic substances, (31) 223.
- partial sterilization, (28) 121.
- radioactivity, (30) 30.
- soil moisture, (28) 720; (36) 513; (40) 719.
- spray mixtures, (30) 423, 424.
- straw, (40) 719.
- sulphur, (31) 125.

- effect on soil fertility, (35) 21; (37) 519.

- effect on solubility of tricalcium phosphate, (39) 23.

factors affecting, (36) 321.

- in acid humus soils, (30) 424.
- acid or nonbasic soils, (30) 517.
- acid soils, (32) 121; (35) 514; (40) 620.
- arid soils, (29) 21, 211.
- Colorado soils, (29) 621.
- cultivated soils, (31) 722.
- Dunkirk Clay Loam, (26) 434.
- fallow soils, (28) 417; (31) 722.
- Hawaii soils, (32) 719.
- Indian alluvium as affected by potsherds, (40) 24.
- moor soils, (40) 811.
- natural soils, (40) 418.
- pasture soils, (30) 399; (31) 516.
- Philippine soils, (34) 718.
- plants, (34) 627.
- plants as affected by naphthalin, (33) 523.
- sandy loam soils, (36) 321.
- semiarid soils, (36) 422.
- soils, (26) 721, 722, 728, 816; (31) 318, 420, 818; (34) 127, 423, 619; (35) 626; (36) 724; (37) 318; (38) 211.

in soils—

- and solutions, (30) 218.
- nature, (36) 513.

- Nitrification—Continued.**
 in soils—continued.
 statistical study, (39) 815.
 studies, (27) 517; (28) 814; (29) 21; (33) 421, 620.
 in solutions, (31) 420.
 tilled and untilled fallow, (30) 216.
 Virginia soils, (29) 621.
 inhibition by alkali salts, (27) 124.
 of green manures, (28) 124; (33) 514.
 of organic compounds in soils, (38) 119.
 of organic manures, (31) 723.
 rate of, (32) 123.
 relation to—
 crop production, (35) 424.
 cultural practices and plant growth, (37) 813.
 soil fertility, (32) 96.
 review of investigations, (30) 11.
 rôle of *Streptothrix* in, (27) 621.
 seasonal variation, (32) 514.
 studies, (28) 217; (32) 320; (33) 124, 422; (39) 324.
- Nitrifying organisms—**
 as affected by cyanamid and dicyanodiamid, (40) 724.
 media for, (35) 226.
 studies, (39) 619.
- Nitrite-forming organism, new, studies, (35) 334.**
- Nitrites—**
 accumulation in soils, (37) 19.
 assimilation, (32) 223.
 assimilation by mold fungi, (29) 29.
 assimilation by plants, (28) 526; (30) 219, 824.
 detection, (26) 108, 506; (33) 804.
 detection in drinking water, (32) 311.
 detection in sewage, (32) 115.
 detection in water, (26) 511.
 determination, (26) 311; (27) 111; (33) 204; (36) 203; (40) 309, 610.
 determination in—
 potable waters, (27) 503.
 presence of nitrous acid, (31) 503.
 sewage, (26) 407.
 soils, (29) 797.
 water, (28) 19.
 effect on determination of oxygen in water, (31) 411.
 formation in aqueous solution by sunlight, (40) 425.
 from nitrates by sunlight, (38) 811.
 in calcium cyanamid, (32) 217.
 in diseased plants, (37) 549.
 in plants, (33) 627.
 localization in plants, (30) 30.
 manufacture, (28) 424.
- Nitrobacteriaceae, genera, (39) 828.**
- Nitrobenzene, insecticidal and larvicidal value, (34) 359.**
- Nitrobenzol—**
 as a parasiticide, (38) 760.
 determination in peanut oil, (31) 413.
- Nitrocultures, preparation and use, (36) 827.**
- Nitrogen—**
 absorption and leaching in soils, (36) 219; (37) 23.
 absorption by oats, (31) 632.
 absorption by soils, (31) 723.
 absorption by trees, (26) 443.
 accumulation and utilization, (40) 125.
 accumulation in continuous rye culture, (30) 424; (31) 318.
 action on musts and wine, (36) 801.
 activity, determination, (27) 496, 499.
 aliphatic amino, determination, (34) 608.
- amino—**
 and anaphylatoxin, (37) 582.
 and polypeptid, determination in barley, malt, and beer, (33) 613.
 determination, (31) 610; (34) 505, 579; (35) 201.
 determination, foam inhibitor, (38) 613.
 determination in blood, (37) 14, 206; (38) 713.
 determination in milk, (40) 509.
 determination in tissues, (31) 808.
 in lymph and blood, (39) 670.
 pea seedlings, (33) 222.
 protein, (33) 201.
 soils, (34) 515.
 relation to quality in flour, (37) 206.
- Nitrogen—Continued.**
ammonia—
 behavior in limed and unlimed soil, (26) 320.
 determination, (31) 109; (38) 311.
 determination in urine, (34) 613.
 determination in water, (29) 617.
 fixation by permutite and clay soils, (29) 127, 517.
 utilization by corn plantlets, (27) 634.
 utilization in protein metabolism, (29) 62.
 analysis, apparatus for, (40) 111.
 and carbon, equilibrium in soils, (38) 421.
 apparatus, all-glass, (40) 609, 806.
 as source of muscular energy, (26) 763.
 assimilating bacteria, studies, (39) 722
- assimilation—**
 as affected by humus, (31) 120.
 by Azolla, (29) 133.
 corn, (28) 225; (37) 223.
 fungi, (29) 824.
 legumes, (29) 326; (30) 435; (31) 523
 living organisms, (30) 323.
 mold fungi, (28) 803.
 plant roots, (27) 634.
 plants, (26) 617; (27) 226; (32) 121.
 rice, (26) 41; (38) 340.
 royal palms, (27) 847.
 Streptothrix, (27) 620.
 from nitrates, ammonium salts, and asparagin, (27) 331.
 in meadows, (26) 422.
 plant cells, (28) 428.
 presence of nitrates, (31) 121.
 atmospheric, abnormal fixation, (29) 819.
- atmospheric, assimilation by—**
 alfalfa, (39) 738.
 mycorrhiza, (30) 826.
 plant hairs, (32) 327; (33) 30.
 plants, (31) 223; (35) 435.
 soil organisms, (32) 29.
 yeasts and fungi, (30) 629; (32) 728.
- atmospheric, fixation, (28) 222, 522; (29) 517, 730; (39) 428.**
- atmospheric, fixation—**
 as affected by plant tissues, (39) 26.
 by aluminum nitrid, (27) 325, 624.
 Azotobacter, (29) 227.
 bacteria, (26) 123, 824.
 boron compounds, (29) 822; (32) 125.
 electricity, (26) 425, 818; (27) 420; (31) 622, 822; (32) 125, 722; (33) 125, 219, 326, 517; (35) 219; (36) 122; (38) 122, 311, 325, 423, 625; (39) 817.
 feldspar, (29) 518.
 fungi, (28) 824.
 legume bacteria, (29) 629.
 nonlegume plants, (37) 819.
- in soils, (33) 213.**
- treatise, (29) 417.**
- atmospheric—**
 industrial fixation, (37) 321, 815.
 utilization, (27) 520, 623; (28) 221, 817; (29) 126, 319, 821; (30) 11, 26, 721; (32) 820; (33) 25, 424.
 utilization by higher plants, (33) 627.
 utilization by radishes, (34) 218.
- availability—**
 experiments, (40) 125.
 in barnyard manure, (26) 323, 424.
 bat guano, (27) 825.
 fertilizers, (26) 523; (36) 818.
 kelp, (33) 206.
 mineral and organic compounds, (34) 621
 available, cost, (26) 95.
 bacterial, determination in feces, (26) 161.
 balance in pot experiments, (27) 21.
 carbid, fertilizing value, (35) 519.
 carbon, and humus ratios in soils, (28) 217.
 combined, in rain, (27) 212.
 combined, losses of, (28) 424.
- compounds—**
 availability for higher plants, (30) 324.
 in growing mustard, (26) 824.
 in rain and snow, (32) 615.
 manufacture, (28) 424.
 manufacture from the air, (27) 824.
 metabolism in etiolated shoots of barley, (35) 434.
 of fundamental rocks, (32) 121.
 of soils, (32) 718.

Nitrogen—Continued.

compounds—continued.

- of soils and fertilizers, (37) 216.
- physical and chemical data, (40) 607.
- sources in United States, (37) 217.
- synthesis by plants, (36) 631.
- containing bodies in grape leaves, (27) 731.
- containing substances, cleavage by yeast, (26) 607.
- cycle in nature, (34) 423.
- cycle in soils, (27) 517.
- deficiency, effect on oat plant, (40) 324.
- determination, (26) 311, 606; (29) 796, 807; (30) 504; (31) 205; (32) 294, 309, 310; (33) 109; (34) 10, 504; (35) 110; (36) 14, 316; (39) 610; (40) 111, 711, 806.
- determination—
 - by colorimetry, (33) 312.
 - in alfalfa hay, (37) 309.
 - algae, (36) 202.
 - ammoniates, (26) 803.
 - bacterial cells, (38) 613.
 - betain, (27) 814.
 - bovine flesh, (39) 201.
 - calcium cyanamid, (26) 804; (36) 426; (37) 413.
 - caustic soda, (32) 300.
 - commercial ammoniates, (27) 8.
 - cottonseed meal, (39) 506.
 - eggs, (39) 715.
 - feeding stuffs, (40) 510.
 - fertilizers, (27) 206; (28) 726; (37) 504.
 - flour, (27) 498.
 - forage plants, (37) 113.
 - humus, (30) 112.
 - meat extract, (27) 498.
 - meat products, (29) 800.
 - meats and meat extracts, (32) 299.
 - mixtures of calcium nitrate and cyanamid, (33) 711.
 - nitrates, (27) 496.
 - Norwegian salt peter, (33) 711.
 - organic substances, (30) 807.
 - peat, (28) 508.
 - raw rubber, (30) 615.
 - rubber, (39) 315.
 - soil solution, (39) 610.
 - soils, (28) 519; (29) 317; (32) 807; (36) 711.
 - tobacco leaves, (37) 509.
 - urine, (26) 870; (29) 508; (31) 502.
 - vegetable matter, (34) 410.
 - water, (27) 497.
 - water and effluents, (34) 410.
 - wheat, (40) 507.
- Kjeldahl apparatus, (36) 14.
- Kjeldahl method, (27) 409, 804; (39) 204.
- micro-Kjeldahl apparatus for, (30) 505.
- digestion—
 - apparatus, description, (37) 503.
 - as affected by sugar, (32) 362.
 - fumeless Kjeldahl, apparatus for, (28) 311.
- distribution—
 - during fasting, (27) 465.
 - in protalbinic and lylsalbinic acids, (38) 310.
 - seeds, determination, (40) 502.
 - soils, (37) 517.
 - wheat spikes, (26) 739.
- economy in Tennessee soils, (38) 212.
- economy of nature, relation to cellulose decomposition, (28) 720; (30) 424.
- effect on—
 - apples, (28) 144.
 - carnations and roses, (29) 840.
 - devitalized apple trees, (33) 540.
 - must and wine, (30) 612.
 - peaches, (33) 840.
 - variation of tomatoes and beans, (29) 339.
- elimination as affected by diet, (30) 864.
- exchange during fasting, (30) 260.
- fate in the animal body, (35) 473.
- fecal, origin, (26) 663.
- fertilization, effect on development of wheat, (27) 38.
- fertilizing value, (26) 537; (27) 324, 433, 437; (28) 122.
- fixation and oxygen release in green plants, (37) 25.
- fixation as affected by—
 - carbohydrates, (28) 816.

Nitrogen—Continued.

fixation as affected by—continued.

- carbon disulphid and toluol, (40) 513.
- colloids, (30) 431.
- humus, (32) 515.
- humus-forming materials, (35) 216.
- liming, (26) 428.
- plant residues, (40) 121.
- sodium nitrate, (38) 723.
- soil moisture, (36) 513.
- soil reaction, (39) 722, 723.
- soluble humates, (30) 431, 721; (31) 516.
- stimulants, (27) 131.
- sugar, (40) 122.
- fixation—
 - bacteriological studies, (26) 521.
 - by aerobic organisms, (27) 729; (31) 721.
 - alumina and carbon, (28) 222; (29) 417.
 - Azotobacter, (27) 517, 828; (33) 823, 620.
 - barium oxid and charcoal, (29) 822.
 - fungi, (27) 225; (36) 632.
 - grass-green algae, (30) 727; (31) 827.
 - leguminous plants, (26) 37, 722; (38) 528.
 - microorganisms, (28) 323; (29) 819; (38) 426, 427; (39) 818.
 - plants, (28) 35; (29) 133; (37) 129; (38) 122.
 - soil bacteria, (28) 628; (30) 217.
 - soil flora, (35) 320.
 - zeolites, (29) 211.
- electric, (40) 127.
- factors affecting, (36) 321.
- in Colorado soils, (29) 621.
- manure, (38) 27, 325.
- Nebraska soils, (29) 734.
- sandy soils, (33) 619.
- soils, (26) 616; (27) 419; (28) 31; (30) 818; (31) 24, 818; (32) 124, 514; (33) 620; (34) 422, 423, 619.
- soils as affected by sulphur, (31) 125.
- stable manure, (35) 218.
- virgin and cultivated soils, (32) 216.
- recent advances in, (40) 801.
- relation to green manures, (38) 27.
- review of literature, (29) 527.
- role of alumina in, (29) 24.
- role of microorganisms in, (26) 37.
- seasonal variation, (32) 514.
- studies, (26) 625; (28) 519; (33) 323.
- fixing organisms—
 - in Iowa soils, (37) 517.
 - media for, (35) 226.
- for barley, (26) 535.
- corn and wheat, (39) 127.
- peaches, (33) 236.
- sweet potatoes, (33) 337.
- form of in soils, (33) 513.
- fraction, new, in soils, (37) 518.
- free amino, in proteins of ox and horse serum, (34) 501.
- free extracts in feeds and foods, (32) 21.
- from alfalfa hay and corn, comparative efficiency, (28) 264.
- from olive-oil residue, (40) 26.
- from Pacific coast kelps, (33) 125.
- gaseous, in swamp rice soils, (37) 424.
- green manure, accumulation in sandy soils, (26) 224; (30) 24.
- humus, notes, (27) 671.
- hunger, metabolism in, (26) 764.
- in alcoholic extracts of leaves, (27) 731.
- alfalfa hay and corn, comparative efficiency, (32) 863.
- amylase preparations from pancreas and malt, (30) 463.
- beet-sugar by-products, (39) 417.
- clays and marls, (32) 121.
- coalgulum and serum of Hevea latex, (36) 710.
- cultivated and abandoned lands, (38) 622.
- dry-farm soils, (31) 318.
- eggs, (28) 64.
- forest soils, (33) 720.
- garbage tankage, (40) 134.
- growing pigs as affected by protein consumption, (32) 73.
- humus of arid soils, (34) 719.
- leaves, studies, (28) 328.
- milk, (32) 207.
- mulberry leaves, (37) 525.
- muscles of invertebrates, (31) 861.
- Nebraska soils, (28) 216.

Nitrogen—Continued.

- in normal diet, minimum, (28) 261.
- parasitic and saprophytic plants, (27) 526.
- peat soils, (39) 10.
- processed fertilizers, (32) 217; (34) 327.
- protein-free milk, (40) 608.
- rain and snow, (29) 209; (30) 211, 815; (32) 120; (38) 416; (40) 724, 809.
- rain water, (35) 620.
- rain water in Alaska, (40) 809.
- rain water in Holland, (26) 614.
- seeds of *Acacia pycnantha*, (34) 729.
- soils as affected by—
 - alfalfa, (40) 319, 719, 722.
 - cultivation and manuring, (29) 417.
 - digestion, (28) 121.
 - heat, (39) 617.
 - molds, (40) 123, 318.
 - soils, notes, (29) 316.
 - soils, studies, (28) 120, 814.
 - South African soils, (26) 420.
 - stored soils, (39) 421.
 - volcanic ash, (40) 812.
 - water, relation to plant growth, (39) 332.
 - wheat, studies, (27) 500.
- increase in fermenting manures, (36) 217.
- injurious, in sugar beets, (30) 15; (31) 315.
- injurious, in sugar cane juice, (30) 15.
- inorganic and organic, assimilation by plants, (26) 32.
- insoluble, availability in fertilizers, (35) 426.
- insoluble, in commercial fertilizers, (40) 134.
- intoxication, seasonal character, (40) 463.
- lime, *see* Calcium cyanamid.
- long-continued use, (34) 128.
- loss from—
 - grass during curing, (32) 111.
 - manure, (26) 522; (32) 818.
 - manure, prevention, (31) 320.
 - peat beds, prevention, (38) 514.
 - soils, (27) 321; (28) 217; (29) 227; (35) 812.
- loss in—
 - calcium cyanamid, (27) 824.
 - cultivated soils, (33) 809; (34) 516.
 - drainage water, (26) 421, 620; (33) 122.
 - green manuring, (38) 622.
 - industrial wastes, (37) 630.
- lysin, in proteins, (33) 201.
- metabolic, determination, (37) 672.
- metabolism—
 - during pregnancy, (35) 473.
 - during recuperation after fasting, (35) 165.
 - during underfeeding, (30) 764.
 - in *Aspergillus niger*, (30) 727.
 - in man, (26) 764.
 - of, (30) 465.
 - bacteria, (39) 110.
 - peas, (37) 24.
 - women, (40) 174.
 - on a rice and vegetable diet, (26) 865.
- methods of manufacture, (40) 25.
- minimum—
 - in fever and during work, (32) 564.
 - physiological, studies, (29) 164.
 - studies, (26) 764.
- monopoly in Germany, (33) 624.
- nitrate, determination in soils and fertilizers, (27) 110.
- nitric—
 - assimilation by green plants, (28) 323.
 - determination in mixed fertilizers, (27) 610.
 - determination in soil, (38) 111.
 - in chernozem soils, (34) 618.
 - movement in soils, (26) 616.
 - production and movement in soils, (27) 418.
- nitrous, in irrigated soils, (37) 120.
- nonprotein—
 - determination in blood, (36) 316; (39) 111; (40) 310.
 - determination in flour, (38) 614.
 - determination in milk, (40) 509.
 - in blood of children, (35) 665.
 - in normal human blood, (28) 665.
 - nutritive value, (26) 665.
 - of feeding stuffs, (36) 205.
- nutrition—
 - in plants, studies, (29) 628.
 - of mold fungi, (32) 327; (36) 527.

Nitrogen—Continued.

- organic—
 - absorption by millet, (29) 628.
 - activity, (27) 206.
 - and mineral, separation, (33) 12.
 - availability, (27) 205; (28) 508; (32) 520.
 - availability in fertilizers, (33) 13.
 - determination of activity, (29) 796.
 - determination of solubility, (26) 523.
 - effect on action of phosphates, (35) 326.
 - in Hawaiian soils, (31) 11; (32) 721; (33) 621.
 - in soils, chemistry of, (26) 320, 615.
 - role in ammonia formation, (32) 818.
- oxidation, (32) 322.
- oxids, determination in atmosphere, (39) 210.
- oxids, utilization, (40) 815.
- peat, formation of nitrates from, (29) 624.
- penetration into plants, (29) 732.
- pentoxid, determination, (26) 708.
- permutite, assimilation by plants, (29) 127, 517.
- peroxid, effect on flour, (31) 162.
- problem in dry farming, (28) 322.
- problem in relation to the war, (40) 25.
- production in United States, (37) 721.
- Products Committee, British, report, (39) 218.
- protein, determination in soil, (39) 204.
- protein table for feeding stuffs, (33) 711.
- ratio as a criterion of quality in flour, (29) 460.
- relation to—
 - citrus nottle leaf, (37) 353.
 - fruit-bud formation, (29) 539.
 - phosphoric acid in flour, (26) 661.
 - sulphur in metabolism, (26) 765.
- relations of crop plants, (40) 821.
- removal by corn crop, (37) 232.
- removal by crops, (39) 724.
- removal from soil, (39) 517.
- residual, in blood before and during absorption of food, (29) 767, 768.
- retention after feeding of urea, (30) 169.
- retention in pigs, (28) 469, 872.
- role in plant nutrition, (26) 530; (27) 26.
- salts, effect on seeds sensitive to light, (35) 222.
- soluble, as factor in judging flour, (29) 60.
- sources in United States, (36) 122.
- sources of, (28) 222.
- synthetic, status of industry, (32) 622.
- total and soluble, in flour, (38) 711, 712.
- transformation—
 - and distribution in citrus soils, (37) 318.
 - as affected by calcium carbonate, (26) 226.
 - in Actinomycetes, (31) 324.
 - in moor soils, (34) 18.
 - in soils, (26) 721; (31) 818.
 - relation to sulfonation, (39) 823.
- utilization—
 - and accumulation, (35) 125.
 - by crops grown separately and in mixture, (26) 617.
 - by legumes, (33) 426.
 - by sugar beets, (33) 434.
- waste and recovery in coal-using industries, (28) 221.
- water-insoluble, in fertilizers, (34) 625.
- water-soluble, in feeding stuffs, (34) 72, 501.
- Nitrogenous compounds—
 - as affected by organic substances, (27) 626; (33) 325.
 - assimilation by mold fungi, (33) 726.
 - decomposition in soils, (33) 808.
 - effect on germination of seeds, (33) 825.
 - effect on legume bacteria, (29) 733.
 - in soils, solubility, (29) 108.
 - inorganic, assimilation by plants, (31) 223.
 - nonprotein, effect on nitrogen intake in pigs, (30) 871.
 - organic, as affected by manganese oxid, (27) 726.
 - selection by *Aspergillus*, (33) 824.
- Nitrogenous constituents of—
 - honey, determination, (26) 207.
 - leaves, displacement by water, (29) 218.
 - lime juice, (29) 161.
 - meat extracts, changes in, (26) 356.
 - urine, studies, (26) 161.
- Nitrogenous fertilizer—
 - Rehmsdorfer, (40) 320.
 - situation in United States, (39) 120.
- Nitrogenous fertilizers—
 - action as affected by distribution in soils, (35) 518.

Nitrogenous fertilizers—Continued.

- artificial, status, (27) 519.
 - availability, (27) 520; (28) 724, 725; (29) 126; (30) 324; (31) 124, 318; (34) 219; (35) 123, 426; (39) 726.
 - availability, determination, (36) 726.
 - availability in presence of sodium nitrate, (38) 723.
 - characteristics, (39) 726.
 - comparison, (26) 31, 33, 125, 324, 425, 523, 536, 725, 735, 736, 829, 836, 837; (27) 24, 218, 519, 531, 626, 724, 832, 833; (28) 325, 723, 725, 736; (29) 23, 125, 213; (30) 125, 626, 632, 839; (31) 36, 517, 518, 820, 821, 822; (32) 323, 336; (33) 25, 219, 220; (34) 24, 25, 129, 327, 518, 621, 622, 820; (35) 22, 126, 323, 325, 427, 518, 519; (36) 121, 626, 818; (37) 321, 426, 739; (38) 133, 220, 516, 517; (39) 327, 328, 537, 622, 623, 726, 817; (40) 125, 242, 539, 724, 824.
 - effect on—
 - acid soils, (39) 627.
 - citrus fruits, (27) 350.
 - composition of beets, (31) 737.
 - composition of sugar beets, (27) 534.
 - flax fiber, (31) 332.
 - grapes, (31) 339.
 - nodule formation, (37) 133.
 - soil nitrates, (33) 422.
 - sugar beets, (26) 332.
 - tobacco, (33) 733.
 - yield of cotton, (31) 136.
 - for apples, (39) 241, 445.
 - arid soils, (34) 621; (36) 726.
 - cranberries, (34) 150.
 - meadow soils, (34) 22.
 - moor soils, (39) 428, 438.
 - oats, (31) 528.
 - olives, (35) 839.
 - oranges, (36) 642.
 - peat soils, (39) 428.
 - rye, (31) 529.
 - semiarid soils, (37) 319.
 - from refuse substances, (33) 125.
 - history and manufacture, (34) 423.
 - hygroscopicity, (26) 226, 525.
 - industry, status, (27) 128.
 - low-grade, availability, (26) 725; (28) 125.
 - manufacture, (34) 622.
 - manufacture and use, (35) 428.
 - manufacture from air, (27) 520.
 - new, production in 1912, (28) 817.
 - nitrifying capacity, (28) 124.
 - production and use, (29) 517.
 - production in 1917, (39) 824.
 - relation to citrus die-back, (29) 248.
 - separation, (33) 12.
 - sources of, (39) 428, 429, 430.
 - sources of in United States, (30) 126.
 - standard and new, notes, (27) 128.
 - transformation in soils, (30) 717.
 - use in arid regions, (34) 219.
 - use of sulphur with, (39) 622.
 - v. leguminous green manures, (39) 31.
 - valuation, (29) 821.
- Nitrogenous—
materials—
- availability, (26) 124; (27) 500, 723.
 - determination in flour, (31) 809.
 - nonprotein, of sugar beets, (28) 810.
- plant foods, inorganic, behavior in sunlight, (30) 823.
- products, absorption, (29) 465.
 - soil constituents, effect on plant growth, (29) 219.
 - soil constituents, studies, (28) 324.
- Nitroglycerin, determination in medicinal tablets, (27) 499.
- Nitrolim—
- fertilizing value, (26) 630, 639; (40) 242.
 - granular v. ordinary, (40) 515.
- Nitrometer, modified Lunge, description, (35) 314.
- Nitron, use in determination of nitrates in soil, (31) 516.
- Nitrous—
acid—
- detection, (28) 804.
 - detection in ethyl alcohol, (29) 312.
 - detection in presence of ferric salts, (32) 115.
 - determination, (27) 609; (40) 610.
 - determination in water, (26) 709.
 - in plant sap, (28) 429; (34) 627.
 - in rain water, (31) 812; (33) 617.

Nitrous—Continued.

- ether, deterioration and decomposition, (27) 614.
 - oxid as an anesthetic, (31) 80.
- Nocardia—
- bovis, studies, (37) 482.
 - infection of udders, (40) 185.
- Noctua spp., notes, (27) 659.
- Noctuid, new, from Brazil, (37) 564.
- Noctuidae in British Museum, catalogue, (28) 856; (31) 652.
- Nocturnal cooling, studies, (40) 314, 715.
- Nodes, branch, nature, (38) 822.
- Nodular—
- disease of the intestines of cattle, (26) 382.
 - intestinal disease of cattle, cause, (27) 289.
 - worm, life history and structure, (29) 476.
- Nodularia harveyana, notes, (28) 31.
- Nodule bacteria—see also Root tubercles.
- as affected by nitrates, (39) 338.
 - as affected by reaction, (39) 722.
- Nodule-forming organisms, alkali tolerance, (40) 435.
- Nola metallopa, notes, (40) 837.
- Nolina microcarpa, notes, (29) 441.
- Nomenclature, stabilizing, (40) 254.
- Nomon, a calculating device for chemists, (38) 204.
- Nonagra truncata, notes, (40) 453.
- Nonarthralpus buxi as affected by heat, (27) 856.
- Nonelectrolytes, effect on action of alcohol on plant cells, (34) 333.
- Nonhalophytes, variations in salt content, (29) 28.
- Nonlegumes and legumes, effect of association, (39) 527.
- Nonnitrogenous constituents, determination in urine, (26) 161.
- Nonpartisan League in North Dakota, (37) 592.
- Nonprotein—
- nitrogen in normal human blood, (28) 665.
 - of feeding stuffs, nutritive value, (26) 71.
 - substances, determination in muscle, (35) 614.
- Noodles—
- artificial coloring, (28) 510.
 - notes, (31) 658.
- Norbanus sp., notes, (29) 458.
- Noropsis hieroglyphica, notes, (40) 56.
- North Carolina—
- College, notes, (27) 99; (29) 498, 900; (31) 696, 900; (34) 296, 496; (35) 97, 698; (36) 99, 295, 500, 696; (38) 97; (39) 198; (40) 900.
 - credit union, (36) 289.
 - Station, financial statement, (26) 899; (29) 95.
 - Station, notes, (27) 99, 199, 398, 699; (28) 698; (29) 498; (30) 600; (31) 900; (32) 798; (34) 296, 496, (35) 97, 197, 698; (36) 295, 500, 696; (38) 97; (39) 96, 198, 300; (40) 398, 900.
 - Station, report, (34) 95; (35) 595; (37) 699; (39) 397.
 - Station, report of director, (26) 899; (29) 95.
- North Dakota—
- College, notes, (28) 698; (29) 196, 700; (30) 95, 798; (32) 198, 397, 798; (33) 198; (34) 496; (36) 899; (37) 399; (38) 799; (39) 97, 698; (40) 498.
 - College, survey, (37) 596.
 - Dickinson substation, report, (35) 299.
 - Edgeley substation, reports, (32) 598.
 - Langdon substation, reports, (32) 598.
 - State engineer, report, (37) 84.
- Station—
- bulletins, index, (34) 796.
 - financial statement, (28) 493.
 - notes, (29) 700; (30) 95; (31) 497; (32) 798; (33) 198; (34) 798; (39) 97, 400, 698; (40) 498.
 - report, (30) 696; (31) 694; (33) 196; (35) 94; (36) 498.
 - report of director, (28) 493.
 - Williston substation, report, (29) 299, 496.
- Nose fly, distribution in United States, (40) 458.
- Nosema—
apis—
- notes, (26) 457, 561; (36) 53, 258; (37) 58.
 - pathogenic to insects other than bees, (30) 459.
 - relation to Isle of Wight disease, (37) 360; (39) 768, 869; (40) 65.
 - studies, (27) 468, 759, 761; (29) 761.
- bombi n.sp., biology and remedies, (32) 759.
- bombycis—
- review of investigations, (30) 549.
 - spores, filament extrusion, (40) 255.

- Nosema—Continued.
bombycis—continued.
structure and life history, (37) 361.
studies, (27) 762.
ichneumonis, notes, (30) 857.
pulicis n.sp., notes, (36) 257.
Nosodendridae, catalogue, (26) 560.
Nostoc spp., notes, (28) 31.
Notanisomorpha meromyzae n.sp., description, (38) 165.
Notarcha (Nacoleia) octasema, biology and remedies, (38) 59.
Notch wing, notes, (28) 157.
Notopocyrus n.g. and n.spp., descriptions, (28) 561.
Nothodiscus antoniae n.g. and n.sp., notes (37) 630.
Nothopattella chinensis n.sp., description, (27) 848.
Notocotyle quinqueserialis n.sp., description, (27) 52.
Notodontian larvae, notes, (40) 648.
Notodontidae, coloration and protective attitudes, (32) 850.
Notodontidae, pupae of, (37) 663.
Notodres muris, notes, (32) 353.
Notophus antiqua, see Tussock moth.
Notophthalmus torosus, studies, (39) 660.
Notopygus virginianus n.sp., description, (35) 262.
Notoxus monodon, notes, (28) 755.
Nova Scotia Agricultural College, notes, (28) 497.
Novarsenobillon for rat-bite fever, (39) 389.
Novius cardinalis—
acclimation in France, (30) 554.
destructive to fluted scale, (31) 60.
notes, (34) 851.
Nuche, studies, (40) 263.
Nuclear division, mechanism of, (28) 668.
Nuclease—
as affected by temperature, (28) 803.
nephelometry in study of, (30) 410.
Nucleic acid—
derivatives in peat, (38) 202.
determination in flesh of mammalia, (27) 807.
effect on plant growth, (28) 324; (29) 219.
effect on soils and plants, (26) 814.
examination, (39) 610.
isolation from soils, (28) 418.
nitrification as affected by lime, (38) 119.
plant, preparation, (38) 505.
Nucleic acids—
and their cleavage products, (30) 201.
isolation from soils, (26) 814.
notes, (32) 678.
treatise, (32) 201.
undigested, determination, (32) 311.
Nuclein—
assimilation by ruminants, (31) 71.
effect on the blood, (26) 482; (27) 577.
feeding of animals, (30) 67.
humification, (38) 26.
importance in the animal organism, (33) 758.
metabolism in pigs, (26) 363.
metabolism, paper on, (26) 69.
notes, (32) 678.
relation to metabolism, (27) 574.
Nucleoproteins—
as antigens, (32) 179.
bacterial, notes, (32) 78.
cleavage products of, (32) 718.
formation in chick embryo, (26) 877.
metabolism, (27) 464.
β—Nucleoproteins, antigenic properties, (37) 77.
Nucleosids, metabolism, (32) 256.
Nucleus, rôle in heredity, (29) 66.
Nudacotyle novicia n.g. and n.sp., description, (37) 355.
Numenius americanus subsp., notes, (39) 654.
Nummularia—
bulliardii, notes, (37) 246.
discreta—
dissemination by tree crickets, (35) 548.
effect on apple bark, (34) 136.
notes, (27) 445, 749; (33) 348; (34) 247, 646; (37) 151.
studies, (39) 53.
transmission by tree crickets, (34) 653.
in Indiana, (36) 542.
Nun moth—
dipterous parasites of, (29) 759.
hymenopterous parasites of, (28) 455.
notes, (27) 861; (30) 755.
Nun moth—Continued.
studies, (28) 775; (31) 251, 454.
tachinid parasite of, (27) 58.
wilt disease, notes, (27) 759.
wipfelkrankheit, studies, (27) 661.
Nurserha—
apicalis, notes, (32) 347.
sp. affecting soy beans, (36) 157.
Nurseries—
insects affecting, (28) 353.
seeding machine for, (27) 191.
Nursery—
experimental and research station in Hertfordshire, (34) 199.
experiments, error in, (36) 735.
industry in Utah, (29) 342; (33) 638.
inspection, (28) 553, 642; (33) 57; (35) 53; (37) 254; (39) 760.
inspection—
certificates, standardization, (33) 745.
in Arizona, (29) 341; (31) 155; (33) 745; (35) 656.
Canada, (29) 252; (32) 448; (33) 746.
Colorado, (30) 249; (34) 651.
Connecticut, (26) 855; (30) 651.
District of Columbia, (35) 755.
Florida, (30) 249.
Hawaii, (34) 59.
Kansas, (28) 156; (33) 153; (37) 357.
Maine, (38) 344.
Maryland, (27) 552.
Massachusetts, (37) 646.
Mauritius, (32) 46.
Minnesota, (26) 59; (28) 653; (32) 753; (38) 155; (39) 358.
New Jersey, (30) 349; (34) 153; (35) 755.
Ontario, (27) 39.
Pennsylvania, (26) 539; (37) 459.
Queensland, (33) 51.
Rhode Island, (27) 857; (33) 153.
South Carolina, (30) 346.
Tennessee, (29) 653; (31) 248; (33) 554.
Union of South Africa, (31) 548.
United States and Canada, (27) 756.
Utah, (29) 342; (33) 638.
West Virginia, (26) 753, 840; (35) 657.
Wisconsin, (38) 155.
inspection law in—
Arkansas, (29) 641; (30) 534; (37) 544.
Colorado, (37) 544.
Florida, (34) 232.
Idaho, (37) 544.
Kentucky, (29) 641.
Missouri, (29) 838.
New York, (38) 39.
Texas, (34) 737.
inspection laws—
and regulations in United States, (38) 39.
and regulations in United States and Canada, (29) 746.
in Canada, (38) 40.
in United States and Canada, (35) 461.
inspection, uniform state law, (32) 398.
practice, notes, (29) 838.
stock—
buying, (28) 897.
die-back disease of, (34) 353, 646.
diseases, descriptions, (31) 448.
diseases in Kentucky, (40) 53.
diseases, treatment, (36) 750.
distribution of peach yellows in, (28) 639.
exclusion legislation, (40) 645.
fire blight affecting, (29) 348, 551.
fumigation, (29) 640; (30) 657; (38) 357; (40) 256.
imported, insects collected on, (38) 857.
imported, inspection, (35) 755; (37) 257.
insects affecting, (32) 449; (34) 251; (37) 760.
inspection and shipment, laws, (39) 644.
laws in United States and Canada, (34) 40.
leaf diseases, dusting, (39) 548.
leaf diseases, investigations, (33) 347.
leaf diseases, treatment, (34) 747.
pedigreed, (26) 741.
"stop-back," relation to tarnished plant bug, (40) 455.
transportation law, (29) 641.
Nursing—
lectures on, (32) 394.
service, rural, of American Red Cross, (30) 793.

Nurudea n.g. and n.sp., description, (38) 857.

Nurudeopsis n.g. and n.sp., description, (38) 857.

Nut—

- butter, notes, (31) 176.
- butters, accessory growth substance in, (38) 265.
- diseases, notes, (31) 546.
- grass, eradication, (37) 132; (38) 828; (40) 823.
- grass, host plant of corn billbug, (26) 862.
- grass, Japanese, control, (35) 528.
- Growers' Association, Northern, proceedings, (35) 145.
- industry in America, (36) 445.
- industry in California, (29) 639.
- kernels, extraction, cleaning, and utilization, (29) 660.
- margarin, analyses, (39) 366.
- margarin, manufacture, (38) 807.
- oils, digestibility, (38) 867.

Nutmeg—

- effect on microorganisms, (35) 557.
- thread blight, notes, (34) 841.

Nutrient—

- materials, translocation in plants, (26) 531.
- media, *see* Culture media.

solution—

- experiments, technique, (40) 817.
- reaction, relation of plant to, (40) 324.
- studies, triangle system, (40) 126.

solutions—

- automatic renewal, (36) 433.
- comparative studies, (36) 224.
- concentration of, (35) 436.
- effect on—
 - plant growth, (36) 630, 631, 731.
 - secretion of diastase by *Penicillium camembertii*, (36) 328.
 - winter rest of plants, (28) 435.
- for plant cultures, (31) 425; (40) 520.
- hydrogen- and hydroxyl-ion concentrations, (38) 736.
- physiological balance, (38) 730.
- physiological balance in sand cultures, (36) 212.
- repeated growing of plants in, (36) 631.

Nutrients—

- absorption by plants, (27) 826; (28) 824; (37) 222; (38) 728.
- artificial synthesis of, (26) 869.
- availability in sand cultures, (35) 423.
- chemistry of, (28) 201.
- dynamic action on kidneys, (26) 465.
- effect on formation of fruit buds, (27) 538.
- for retarded children, (32) 458.
- organic, behavior in cell metabolism, (31) 361.
- osmotic pressure in relation to plant growth, (35) 434.
- stimulating effect on metabolism, (40) 270.

Nutrition—*see also* Digestion, Food, Metabolism, etc.

- amino acids in, (31) 558.
- and clinical dietetics, (39) 567.
- and diet, textbook, (30) 453.
- and growth, standards for, (40) 865.
- animal, *see* Animal nutrition.
- as affected by saccharin, (25) 257.
- as affected by salt, (27) 464.
- as factor in fetal development, (28) 570, 574; (33) 266.
- bibliography, (32) 760.
- biochemical analysis, (35) 368.
- bulletins of University of Texas, (33) 364.
- calcium and phosphorus requirement, (40) 174.
- "central-normal," of adults, (33) 462.
- chemistry of, (32) 854; (33) 258.
- class for undernourished children, (40) 661.
- coefficient of school children, (29) 364; (32) 458.
- defective, in school children, determination, (33) 664.
- digest of data, (32) 359, 857; (37) 469.
- discussion, (26) 562.
- diseases, relation to diet, (26) 264.
- during growth, choice of diet for by rats, (39) 770.
- effect on—
 - amylase content of human saliva, (29) 568.
 - gaseous metabolism of cold-blooded animals, (30) 563.
 - growth of the brain, (34) 662.
 - mental development, (31) 557.
 - plant diseases, (27) 848.
 - sexual development of plants, (34) 824.

Nutrition—Continued.

- essentials of, (38) 662.
- experiments, (39) 364, 665, 666, 667.
- experiments with rations from restricted sources, (39) 71.
- handbook, (26) 658; (30) 63.
- human, food chemistry in the service of, (39) 163.
- importance of calcium in, (40) 767.
- in children, (31) 463.
- inorganic elements in, (40) 70.
- inorganic sulphates in, (40) 71.
- laboratory manual, (36) 396.
- laboratory of Carnegie Institution, (27) 466; (32) 565; (34) 764; (40) 465.
- lectures on, (36) 865.
- limited, effect on growing steers, (40) 567.
- mineral elements in, (29) 862.
- modern theories, (30) 764.
- newer knowledge of, (40) 554.
- of farm animals, treatise, (38) 268.
- growing animals, (26) 768.
- the masses, economic effects, (31) 462.
- women, phosphorus and calcium requirements, (39) 364.
- workingmen, (33) 662.
- papers on, (32) 760; (35) 99, 858, 859; (40) 864.
- plane, effect on breeding cattle, (31) 367; (33) 265.
- plant, *see* Plant nutrition.
- principles of (32) 659, 663.
- problems, discussion, (29) 665.
- problems of the army, (39) 367.
- relation to microorganisms of air and food, (36) 562.
- review of investigations, (27) 461; (34) 762.
- review of literature, (26) 266; (33) 169, 462.
- role of carbohydrates in, (32) 359.
- role of gliadin in, (28) 864.
- role of lipins in, (33) 663.
- role of lipoids in, (26) 766.
- science of, treatise, (38) 468, 661.
- studies, (26) 70, 155, 158, 358, 564; (27) 464; (39) 368.
- studies—
 - in United States, (28) 362.
 - methods, (27) 469.
 - national laboratories for, (40) 554.
 - of Carnegie Institution, (29) 270; (33) 167, 567; (36) 763.
 - of Office of Experiment Stations, (30) 258; (31) 359.
 - of U. S. Department of Agriculture, (32) 255.
- summary and digest of data, (34) 255.
- textbook, (35) 268.
- theories of, (28) 669.
- treatise, (28) 567, 569; (29) 266; (31) 262, 263, 760; (33) 662; (34) 658; (35) 765.
- value of extractives in, (34) 258.
- value of protein in, (26) 764.
- work of Prussian Board of Health, (31) 857.
- writings of J. von Liebig, (32) 109.

Nutritional—

- deficiency diseases, bibliography, (36) 663.
- physiology, treatise, (40) 463.

Nutritive—

- elements, effects on oat plant, (40) 324.
- factors in animal tissues, (39) 665, 873.
- factors in plant tissues, (39) 665.

Nutrose, substitute for, (38) 710.

Nuts—

- acreage and values in California, (40) 538.
- arsenic in, (27) 269.
- as food, (33) 364; (40) 173.
- breeding, (28) 543.

culture—

- along highways, (38) 44.
- experiments, (26) 237; (34) 231; (38) 444, 641; (39) 843.
- in Arizona, (32) 232.
- California, (35) 142.
- Canada, (35) 145.
- New York, (35) 145.
- Pennsylvania, (35) 145.
- southern Texas, (32) 539.
- southern Utah, (30) 442.
- review of literature, (33) 143.
- treatise, (33) 537.
- edible and oil-producing in West Africa, (36) 611.

Nuts—Continued.

- edible, of Guam, (28) 142.
- grafting, new method, (33) 643.
- insects affecting, (29) 354; (40) 259.
- investigations, (40) 150.
- marketing cooperatively, (26) 92.
- microscopic identification, (28) 565.
- of Hawaii, composition, (32) 761.
- of Trinidad and Tobago, (39) 449.
- planting in eastern United States, (38) 542.
- prevention of beriberi by, (31) 762.
- propagation, (31) 443.
- pruning, (33) 838.
- soaking, (29) 60, 264.
- varieties, (30) 41, 640; (32) 232; (34) 231; (38) 641.
- varieties for Ceylon, (39) 845.
- varieties for Georgia, (34) 436.
- varieties for Minnesota, (33) 140.
- variety collections, (40) 834.
- Nuttallia equi**—
 - description, (31) 382.
 - in equine biliary fever in India, (32) 278.
 - relation to equine piroplasmosis, (26) 177.
- Nuttalliosis**—
 - in horses, notes, (26) 888.
 - in Russian Turkestan, (37) 374.
- Nuttallornis borealis**, feeding habits, (28) 57.
- Nymph**, agglutinating capacity and complement fixing power, (28) 375.
- Nymphaea**—
 - alba, chemistry and anatomy of, (34) 522.
 - mexicana as a duck food, (30) 545.
- Nymphula**—
 - depunctalis, notes, (34) 250.
 - nymphaeata, notes, (37) 847.
- Nymphulinae**, North American, notes, (37) 564.
- Nysius**—
 - angustatus, notes, (29) 252.
 - delectus, notes, (31) 249.
 - ericae (angustatus), remedies, (36) 154.
 - ericae (angustatus), studies, (39) 464.
 - minutus, notes, (37) 847.
 - minutus, remedies, (39) 760.
 - senecionis as an enemy of vines, (33) 154.
 - senecionis, notes, (29) 854.
 - vinitor, notes, (35) 853; (40) 753.
- Nyssorhynchus annulipes**, notes, (35) 258.
- Oak**—
 - and beech, union of, (33) 343.
 - and birch, union of, (33) 343.
 - canker, description, (32) 442.
 - cork, introduction into southern California, (28) 543.
 - cork, yellow spot disease of, (31) 247.
 - ossid on pecan, (33) 157.
 - disease in Westphalia, (32) 845.
 - diseases in Brittany, (33) 56.
 - diseases, notes, (26) 57; (31) 451, 841; (39) 149.
 - fungus on nursery stock, (33) 744.
 - heart rot, distribution, (32) 150.
 - heart rot, studies, (30) 52.
 - high forests on the Rhine, yield tables, (29) 747.
 - honeycomb heart rot, studies, (34) 448.
 - leaf spot, large, notes, (28) 55.
 - leaf spot, new, studies, (39) 549.
 - leaf spot, unreported, in New Jersey, (33) 250.
 - leaves, decomposition in soil, (40) 214.
 - mildew—
 - classification and host relationships, (37) 155.
 - in Alsace-Lorraine, (28) 852.
 - in Europe, (27) 153.
 - in Hungary, (31) 845.
 - notes, (28) 350; (30) 544, 653, 849; (33) 745; (35) 655.
 - studies, (27) 253, 548; (35) 51.
 - treatment, (26) 451.
 - wintering over, (28) 651.
 - Moreh, notes, (36) 243.
 - Oidium**—
 - in France, (37) 756.
 - notes, (26) 551; (27) 753, 853; (32) 150; (33) 549.
 - studies, (29) 553; (31) 246; (34) 650.
 - treatment, (27) 855.
 - Oregon, notes, (27) 846.
 - phylloxera, life history and habits, (32) 57.
 - poisoning of livestock, (39) 886.
 - pruner, notes, (33) 58.
 - pruner on pecan, (38) 157.

Oak—Continued.

- reddish or brown heartwood of, studies, (34) 849.
- root diseases, notes, (30) 147.
- root fungus on pear, (40) 252.
- roots, mycorrhiza on, (37) 756.
- scale, golden, notes, (28) 353.
- scale, studies, (32) 553.
- seeds, storage experiments, (37) 547.
- silk, crown gall affecting, (28) 447.
- tortrix, notes, (29) 558.
- tree *Cerococcus*, notes, (28) 159.
- tree moth, notes, (28) 159.
- twig blight, notes, (27) 651.
- twig girder, remedies, (31) 60.
- twig pruner, *see* *Elaphidion villosum*.
- unit stresses for, (36) 91.
- white rot, studies, (35) 655.
- wood, *Coniophora cerebella* on, (39) 553.
- wood, protection against dry rot, (27) 654.
- wood, quality as affected by light, (27) 542.
- wood, resistance to dry rot, (26) 752; (32) 150.
- woods, North American, identification, (26) 338.
- worm, orange striped, notes, (29) 353.
- Oakesia sessilifolia*, seed formation in, (31) 225.
- Oaks**—
 - absorption of nitrogen by, (26) 443.
 - and olives, growing in close proximity, (35) 654.
 - as affected by smoke, (31) 521.
 - bitter, notes, (36) 540.
 - cerambycid beetle affecting, (26) 59.
 - chestnut, *Sphaeropsis* canker of, (31) 450.
 - chestnut, twig blight of, (30) 453.
 - destruction by *Agrilus bilineatus*, (32) 656.
 - distillation value, (32) 48.
 - dying, in Westphalia, (33) 650.
 - dying, notes, (30) 655; (31) 246.
 - Emory, in southern Arizona, (27) 647.
 - food plant of purple scale, (26) 756.
 - forcing experiments, (28) 435.
 - fossil, of America, (40) 153.
 - germination studies, (40) 47.
 - histological variations in, (34) 440.
 - hybrid, in United States, (37) 820.
 - hybridization experiments, (40) 47.
 - Irish, composition and mineral constituents, (36) 804.
 - live, carpenter worm affecting, (31) 550.
 - live, insects affecting, (28) 159.
 - live, seedling structure, (27) 442.
 - of central California, (31) 839.
 - of North America, (39) 50.
 - periodicity in, (29) 442.
 - preserving, (38) 554.
 - red, cost of growing, (26) 49.
 - red, culture and value, (34) 639.
 - red, density and porosity, (32) 47.
 - red, pith-ray flecks in, (30) 855.
 - resistance to *Oldium*, (40) 253.
 - root parasite of, (30) 354.
 - scarlet, disease of, (34) 448.
 - spraying with lead chromate, (31) 60.
 - valonia, bibliography, (31) 342.
 - white—
 - of eastern North America, (33) 646.
 - polyembryony in, (40) 226.
 - ray system, (40) 153.
 - ray tracheids in, (38) 45.
 - seedling structure, (27) 442.
 - with persistent foliage, leaf structure, (35) 543; (36) 330.
- Oases, irrigation, (31) 287.
- Oat**—
 - amylase, studies, (31) 609.
 - and pea hay, cost of production, (32) 527.
 - and pea silage, notes, (27) 736.
 - aphis—
 - alternate hosts, (39) 464.
 - cat-tail as summer host, (37) 461.
 - correct name, (38) 462.
 - in Maryland, (38) 154.
 - injurious to apples, (33) 253.
 - notes, (31) 753; (32) 755; (40) 648.
 - remedies, (36) 857.
 - blights, bacterial, notes, (40) 846.
 - bran, analyses, (26) 266.
 - by-products, analyses, (28) 464; (39) 270.
 - by-products, paper on, (28) 74.
 - chaff, analyses, (27) 469; (29) 467.
 - clippings, analyses, (28) 464.
 - clippings, definition, (28) 98.

Oat—Continued.

crown rust—

aecial stage, staining in host tissue, (39) 248.
studies, (37) 749; (38) 645.
treatment, (27) 746.

winter resistance of uredospores, (29) 645.

diet, effect on guinea pigs, (36) 364.

diet, effect on phenol excretion, (40) 273.

diet, exclusive, injurious effects, (34) 366.

diseases, life history and treatment, (28) 346.

diseases, notes, (35) 245.

diseases, studies, (30) 846.

dry spot—

notes, (26) 447; (27) 849; (28) 149; (29) 151.

studies, (33) 546, 547, 847.

treatment, (28) 820.

feed, analyses, (38) 369; (40) 571.

fields, weed control in, (40) 536.

flour, analyses, (29) 270; (38) 666.

fodder, analyses, (36) 65.

Fusarium diseases in Bavaria, (30) 748.

grass, culture experiments, (29) 631.

grass, seeding on ranges, (30) 35.

grass, tall—

analyses, (27) 68; (30) 565.

as affected by number of cuttings, (29) 431.

culture experiments, (26) 422; (40) 136.

digestibility, (32) 168.

fertilizer experiments, (26) 422.

field tests, (39) 135.

for irrigated pastures, (39) 434; (40) 432.

irrigation experiments, (32) 224.

meadow, yields, (40) 733.

moisture content and shrinkage, (34) 828.

palatability, (34) 865.

pollination experiments, (37) 735.

varieties, (29) 139; (30) 434.

vitality of seeds, (27) 740.

grass, yields, (29) 631.

grey leaf or dry leaf, notes, (31) 243.

groats, analyses, (38) 665.

hay—

analyses, (29) 467; (32) 465.

chloroform extract of, (31) 71.

composition, (27) 668.

digestibility, (27) 669; (37) 168.

forage poisoning due to, (37) 689.

injurious effect on horses, (36) 280, 580.

mineral constituents, digestibility, (40) 769.

hulls—

analyses, (26) 665; (27) 774; (28) 464; (29)

270, 666; (30) 868; (31) 168; (32) 667; (34)

665; (35) 374, 867; (36) 167; (38) 67, 369;

(39) 270; (40) 571, 665.

digestibility, (29) 367.

ground, analyses, (27) 170; (38) 369.

hybrids, dominant and recessive characters in,

(28) 197; (30) 33.

hybrids, yields, (31) 527.

kernel, dietary deficiencies, (37) 61.

kernel, fatty substances in, (26) 502.

leaf spot, notes, (27) 246.

leaf spot, treatment, (27) 149.

leaves, deformation, (33) 647.

loose smut—

description and treatment, (31) 446.

life history and treatment, (28) 445.

notes, (32) 48.

notes and treatment, (28) 51.

prevention, (33) 245.

studies, (35) 845.

treatment, (27) 445, 734; (31) 344; (32) 49.

midlings, analyses, (27) 170; (36) 268, 765; (37)

471; (39) 167.

mildew, notes, (36) 541.

mildew, studies, (35) 845.

mite, description, (35) 468.

plant, nutritive elements, (40) 324.

powdery mildew, studies, (31) 343; (35) 651; (37)

749.

products, analyses, (29) 367.

protein, nutritive value, (39) 665, 666.

proteins, supplements for, (36) 560.

rust, description, (35) 47.

rust, notes, (26) 143.

rusts in Canada, (34) 51.

seed, spraying, (39) 248.

seedlings—

as affected by nitrates, (31) 231, 528.

as affected by ultraviolet rays, (26) 430.

Oat—Continued.

seedlings—continued.

distribution of stomata in, (32) 221.

etiolated, tropic sensitivity of, (28) 630.

hypocotyl development, (38) 525.

phototropism in, (30) 725.

sickness in soils, (32) 442.

silage, acidity, (39) 310, 878.

smut—see also Smut and Cereal smut.

in Indiana, (36) 542.

inoculation experiments, (37) 750.

notes, (28) 443; (29) 831; (31) 829; (38) 848;

(39) 353.

notes and treatment, (28) 51, 544.

studies, (38) 646.

treatment, (27) 137; (31) 98; (34) 744; (36)

449; (37) 750; (39) 137, 248, 353, 354, 549,

851; (40) 49, 155, 156, 630, 735, 747.

smuts—

cause and treatment, (30) 47.

descriptions and treatment, (38) 249; (39)

248.

sprouter, description, (27) 279, 374; (36) 75.

starch as affected by pancreas diastase, (28) 660.

starch, studies, (31) 828.

stem rust, spore morphology, (40) 642.

stinking smut, notes, (35) 348.

straw—

analyses, (28) 768; (34) 164; (36) 65.

analyses and use as human food, (33) 866.

as bedding, (39) 621.

composition and digestibility, (34) 565.

effect on bacterial activity of soils, (35) 216.

feeding value, (40) 666.

lime and phosphorus content, (26) 873.

nitrification of, (31) 724.

v. alfalfa hay for steers, (36) 269.

stripe blight, notes, (40) 846.

white heads or take-all, notes, (30) 148.

white heads or take-all, studies, (28) 646.

Oatmeal—

analyses, (26) 267; (31) 467.

bread, notes, (27) 664.

by-products for feeding, (40) 72.

flour, recipes, (40) 67.

in bread making, (40) 360.

midlings, analyses, (35) 562.

Oats—

acclimatization tests, (27) 138.

acid poisoning due to, (34) 766.

adjustment to light, (32) 522.

alkali tolerance, (40) 719.

amino acid in, (33) 665.

analyses, (26) 266, 362, 363, 369, 770; (27) 170,

340, 570; (28) 265, 463; (29) 367; (30) 434, 528;

(31) 431, 467, 470, 864; (32) 171, 465, 862; (33)

734; (34) 630, 668; (35) 562; (36) 65; (38) 67;

(39) 773.

anatomical investigations, (29) 831.

and barley, comparative growth in nutrient

solutions, (40) 134.

barley, comparative yields, (40) 135, 328.

Canada peas, silage from, (28) 734.

clover following various crops, (40) 829.

corn, analyses, (40) 665.

cowpeas, liming experiments, (40) 126.

cowpeas, mixture digestibility, (38) 778.

field peas, seeding experiments, (31) 36.

oat hay, cost of production in South, (39)

294.

and peas—

as hay crop, (39) 333, 386; (40) 736.

as silage crop, (40) 731.

cost of production, (34) 137.

seeding and harvesting dates, (37) 135.

seeding experiments, (37) 640.

yields, (40) 735.

and vetch, fertilizer experiments, (40) 134.

and vetch for green fallow, (40) 229.

as affected by—

barium and strontium, (40) 819.

calcium and magnesium, (35) 726.

companion crop of mustard, (36) 438.

greenhouse temperature, (37) 533.

lead nitrate, (26) 225.

lime, (26) 429.

manganese, (28) 328.

meteorological conditions, (29) 509.

rotation system, (39) 639.

soil acidity, (40) 134, 324.

Oats—Continued.

- as affected by—continued.
 - soil volume and available plant food, (31) 132.
 - sulphur, (38) 221.
 - uranium and lead, (28) 731.
 - water level, (26) 620.
 - weather conditions, (27) 641.
- food for man, (27) 663.
- forage crop, (38) 827.
- green manure, (38) 27; (39) 423.
- hay and silage crop, (39) 737.
- meadow cover crop, (40) 137.
- nurse crop, (31) 524; (40) 329.
- pasture and hay crop, (28) 231.
- pasture crop, (38) 470; (39) 880.
- silage crop, (39) 134.
- sole ration for animals, (39) 72.
- sole ration for guinea pigs and rabbits, (35) 781.
- wheat flour substitute, (39) 871.
- ash analyses, (29) 861.
- assimilation of—
 - nitrogen by, (26) 319.
 - phosphorites by, (27) 340.
 - soil constituents by, (31) 632.
- awn development in, (31) 332.
- awning, studies, (39) 234.
- biennial cropping, (32) 226; (38) 430.
- black, eradication, (27) 435.
- bleached with sulphur, notes, (27) 566.
- bleaching with sulphur dioxide, (40) 35.
- breeding, (26) 434; (40) 523.
- breeding and improvement in Sweden, (39) 833.
- breeding experiments, (26) 831; (27) 734; (29) 138, 532; (33) 331; (35) 831; (36) 336, 834; (37) 738, 827; (39) 126, 234, 334; (40) 233, 524.
- bushel weights, (37) 889.
- calcium cyanamid for, (31) 524.
- catalytic fertilizers for, (30) 627.
- change in weight during storage, (30) 639.
- classification, (30) 528.
- classification of varieties (27) 138.
- color and other characters, relations, (40) 239.
- common and bearded, origin and early habitat, (40) 629.
- competition in, (27) 430.
- composition as affected by—
 - companion crop, (26) 617.
 - degree of maturity, (27) 340.
 - fertilization and soil preparation, (34) 230.
 - irrigation, (28) 332.
- composition at different stages, (39) 836.
- correlation in, (31) 434; (32) 736, 737.
- cost of production, (29) 690; (32) 530, 594, 688; (33) 293, 831; (35) 691; (37) 191; (40) 292.
- cost of production in Great Plains area, (33) 232.
- critical period of growing season, (39) 811.
- crushed, analyses, (27) 170; (28) 265; (31) 73, 366; (36) 765.
- crushed v. whole, for work horses, (36) 866.
- cultivated, origin, (27) 237; (30) 338, 527; (32) 131.
- culture, (27) 32, 139, 337; (29) 830; (30) 434; (31) 35, 265; (32) 132, 226, 598; (33) 731; (34) 138, 694; (36) 530; (38) 340, 636; (39) 834.
- culture—
 - continuous, (37) 137.
 - experiments, (26) 38, 233, 329, 422, 737; (27) 232, 233, 336, 430, 530, 638; (28) 321, 633; (29) 36, 225, 425, 426, 427, 630, 632, 735, 831; (30) 33, 133, 527, 632; (31) 44; (32) 36, 132, 430, 431, 526, 528, 529, 530; (33) 31, 232, 633, 729, 830; (34) 137, 228, 631; (35) 228, 229; (36) 32, 33, 132, 436, 830; (37) 226, 329, 436, 529, 534, 731, 823; (38) 132, 234, 336, 631, 632, 634, 735, 825, 830; (39) 124, 125, 126, 127, 227, 335, 436, 437, 834, 835; (40) 228, 731, 735, 825.
 - for chicken feed, (38) 827.
 - for hay, (37) 436.
 - for silage, (26) 574.
 - in Argentina, (35) 136.
 - Chile, (39) 231.
 - cotton belt, (32) 533.
 - Indiana, (40) 735.
 - Iowa, (39) 136.
 - Mexico, (32) 131.
 - Michigan, (39) 320.
 - Mississippi, (33) 431.
 - Nebraska, (29) 534; (38) 740.

Oats—Continued.

- culture—continued.
 - in New Mexico, (40) 18.
 - North Carolina, (27) 531.
 - North Dakota, (40) 736.
 - Rhodesia, (27) 32, 637.
 - Texas Panhandle, (29) 429; (35) 440.
 - western Nebraska, (35) 438.
 - Wyoming, (38) 527; (40) 630.
 - on moor soils, (30) 229; (38) 132; (39) 437; (40) 230, 522.
 - on Wisconsin drift soil, (36) 623.
 - relation to rainfall, (33) 715.
 - under dry farming, (26) 828; (36) 528, 529; (37) 329; (39) 131.
 - under irrigation, (34) 528.
- decomposition in soil, (40) 214.
- depth of sowing tests, (27) 835.
- depths of plowing tests, (40) 624.
- description and classification, (26) 41.
- descriptions, (31) 230.
- dietary properties, (37) 264.
- digestibility, (37) 678.
- distance experiments, (30) 732.
- distribution of nitrogen in, (36) 269.
- drawings of, (29) 141.
- drilling v. broadcasting, (33) 33.
- dwarfness in, (40) 827.
- dynamiting and subsoiling experiments, (32) 528.
- effect on—
 - Azotobacter, (40) 618.
 - carbon dioxide content of soil air, (39) 516.
 - companion crop of wheat, (32) 432.
 - flavor of milk, (30) 573.
 - following crop, (40) 623.
 - milk and butter, (34) 570.
 - nitrate content of soils, (29) 818.
 - soil bacteria, (37) 421.
 - soil moisture, (34) 17.
 - succeeding crops, (32) 224.
- electroculture experiments, (37) 336; (38) 525, 526; (39) 230; (40) 428.
- ergot affecting, (27) 149.
- factors affecting composition, (27) 139.
- fall-sown, in Maryland and vicinity, (36) 736.
- feeding value, (34) 867.
- fertilizer experiments, (26) 31, 33, 324, 330, 331, 422, 424, 428, 522, 523, 527, 534, 535, 622, 623, 630, 632, 725, 817, 818, 833; (27) 32, 137, 321, 324, 337, 520, 530, 626, 627, 628, 638, 725, 726, 832, 837; (28) 124, 221, 222, 231, 431, 533, 623, 732, 724, 734, 735, 815, 816, 818, 820; (29) 23, 126, 127, 211, 213, 228, 318, 518, 624, 727, 728, 735, 821, 831; (30) 26, 125, 220, 229, 235, 326, 327, 335, 428, 519, 632, 820, 822; (31) 31, 37, 123, 129, 217, 430, 528, 820, 821, 822, 828, 829; (32) 431; (33) 219, 326, 430, 632, 729, 831; (34) 22, 24, 128, 131, 294, 327, 330, 423, 517, 518, 622, 630, 723, 726, 820; (35) 30, 33, 126, 218, 220, 325, 326, 425, 426, 427, 428, 518, 519, 520, 629; (36) 23, 134, 212, 217, 428, 529, 626; (37) 29, 30, 34, 134, 216, 229, 436, 635, 823; (38) 230, 517, 620, 726, 728, 820, 825, 829; (39) 22, 127, 137, 327, 334, 335, 427, 435, 436, 624, 639, 728, 729; (40) 135, 218, 229, 239, 734, 825.
- fertilizing value, (31) 220.
- Fichtel Mountain, breeding, (30) 38.
- floral anomalies in, (29) 629.
- for cows, (30) 176.
- for cut-over land pasture, (39) 231.
- for summer silage, (29) 473.
- forcing by electricity, (26) 136.
- geotropism and phototropism in absence of oxygen, (39) 826.
- germinating power as affected by age, (27) 740.
- germination as affected by—
 - depth of planting, (36) 437.
 - electrolytes, (35) 332.
 - fertilizers, (29) 327.
 - fungicides, (29) 346.
 - Orwood, (28) 536.
 - stimulants, (26) 131.
- germination—
 - at different dates after threshing, (40) 443.
 - energy of, (29) 538.
 - in acid, base, and salt solutions, (30) 228.
 - in mercury vapor light, (30) 827.
 - tests, (29) 223, 740; (30) 837; (31) 136, 733; (37) 239.
 - tests in hydrogen peroxid, (27) 201.

Oats—Continued.

- germinative ability and vegetative force, (29) 740.
- germ-ripening experiments, (26) 131.
- Göttinger, characteristics, (28) 738.
- grades, (32) 138.
- green, analyses, (27) 170; (29) 467.
- green manuring experiments, (32) 721; (40) 24.
- ground, analyses, (26) 72, 468, 665; (27) 570, 774; (28) 265, 464; (29) 666, 769; (30) 67; (31) 663, 863; (32) 259; (34) 467; (35) 374; (37) 767; (38) 369, 665; (40) 571.
- ground seaweed for, (40) 724.
- growing—
 - in Coloma sand, (39) 323.
 - with corn, (40) 822.
 - with legumes, (39) 816; (40) 822.
 - with soy beans, (39) 741.
 - without potash, (39) 334.
- growth as affected by—
 - alkali salts, (34) 125; (36) 118.
 - electricity, (28) 827.
 - fertilizer salts, (29) 329.
 - meteorology, (29) 510.
 - spacing, (31) 328.
- growth—
 - in heated soils, (26) 815; (27) 620.
 - in vertical illumination, (32) 129.
 - on sterilized soils, (31) 336.
 - on volcanic ash, (29) 726; (32) 36.
 - studies, methods, (38) 526.
- hardiness, relation to sap density, (39) 430.
- hay and silage from, (33) 632.
- heredity of albinism in, (31) 329.
- history, (31) 131, 230.
- hull content, determination, (36) 231.
- hulled, investigations, (29) 141.
- hulled, seed value, (36) 439.
- hull-less, analyses, (33) 759.
- humin nitrogen content, (40) 510.
- husk percentage in, (37) 537.
- hybridization investigations, (26) 831.
- hybridization v. selection in, (29) 635.
- imports from Canada, (31) 95.
- improvement, (28) 431, 828; (29) 532, 535; (32) 630.
- improvement in Canada, (37) 831.
- inheritance in, (37) 332.
- inheritance of—
 - early and late ripening, (40) 528.
 - glume characters in, (36) 834.
 - hull-lessness, (40) 438.
 - tight and loose paleae, (40) 629.
- inoculation experiments, (35) 32.
- inosite phosphoric acids of, (39) 14.
- introduced and acclimated, (40) 429.
- irrigation, (31) 328.
- irrigation experiments, (27) 531; (28) 130, 132, 134, 230, 827; (29) 32, 138, 226, 632; (30) 35; (31) 36; (32) 37, 225; (33) 286, 631, 731, 827, 884; (37) 640, 822.
- kernel-percentage determinations, (40) 35.
- large v. small seeds, (26) 636.
- liming experiments, (29) 223; (32) 31, 132, 812; (34) 132, 133; (36) 27; (39) 221, 729; (40) 322.
- lodging, (39) 436.
- lodging, control, (36) 827.
- loose smut, description and treatment, (26) 341.
- maltase content, (31) 204.
- manurial value, (40) 127.
- manuring experiments, (40) 331, 431, 630.
- market grades, (27) 139.
- measurements, (30) 235.
- molasses sludge as a fertilizer for, (33) 818.
- nematode infection of, (36) 150.
- nematodes affecting, (28) 149; (29) 151; (30) 649; (32) 641, 750.
- new, moisture content, (34) 92.
- new strain, (40) 329.
- northern grown seed, (36) 634.
- notes, (26) 362.
- of Algeria, (34) 36.
- omission of color factor in, (29) 739.
- on inoculated soil, (39) 519.
- pasturing, (35) 827.
- pasturing experiments, (33) 830.
- pedigreed, in Wisconsin, (37) 438; (40) 624.
- peptic digestibility, (29) 164.
- phosphoric acid exchange in, (28) 818.
- phytin content, (31) 707.

Oats—Continued.

- planting and harvesting dates, (26) 533.
- planting experiments, (27) 139.
- plat tests, technique, (40) 227, 623.
- pollination, (36) 527.
- potash fertilizers for, (26) 526.
- precipitin test for, (31) 733.
- prices and shrinkage, (34) 337.
- primary, secondary, and double kernels for seed, (40) 731.
- production in—
 - Argentina, (27) 193.
 - Bohemia, (32) 827.
 - 1911, (26) 595, 792.
 - Russia, (26) 294.
 - Spain, (28) 736.
 - United Kingdom, (26) 793.
- protein content, following black fallow, (34) 230.
- radioactive fertilizer for, (31) 129.
- ratio of straw to grain, (32) 40; (36) 218.
- red roots of, (28) 442.
- relation between size of seed and yield, (26) 434.
- relation of tops to roots, (31) 733.
- relative yielding capacity, (40) 625.
- residual manurial value, (39) 530.
- right- and left-handedness in, (30) 335.
- rock phosphate for, (29) 418.
- rod-row tests, technique, (38) 429.
- rolled—
 - amino acid in, (33) 665.
 - analyses, (30) 63; (32) 667.
 - as flour substitute, (37) 895.
- root pruning experiments, (33) 731.
- root system, (32) 634.
- root system and yield, relationship, (30) 38.
- rotation experiments, (33) 429, 828, 829; (36) 829; (38) 129; (40) 229, 331, 431, 733, 829.
- rust-resistant variety, description, (31) 332.
- rye stalk disease affecting, (26) 546.
- secondary rootlets, (40) 32.
- seed—
 - bed preparation, (33) 232; (37) 29.
 - cleaning, (40) 40.
 - examination, (33) 734.
 - home-grown v. imported, (40) 630.
 - longevity, (32) 634.
 - selection, (31) 226.
 - tests, (39) 137.
 - treatment, (39) 238.
 - viability as affected by age, (31) 624.
- seedling—
 - depths, (40) 227.
 - experiments, (26) 231, 331; (27) 335, 638, 639; (29) 36, 223, 224, 225, 425, 426, 429; (30) 333; (31) 328, 631; (32) 528, 530, 531; (33) 431, 729; (35) 34, 335; (36) 33, 34, 134; (37) 30, 134, 226, 537, 635, 731; (38) 630, 740; (39) 137, 228, 336; (40) 228, 731.
 - experiments, error in, (39) 830.
 - tests under irrigation, (39) 133.
 - time, (40) 728.
- selection experiments, (35) 334, 826; (37) 32, 226; (38) 740; (40) 233, 429, 528.
- selection of varieties, (28) 633.
- selection within pure lines, (33) 38.
- shrinkage tests, (38) 840.
- size and sprout value in relation to yield, (38) 732.
- soil moisture removal by, (40) 430.
- spontaneous omission of color factors in, (28) 531.
- spring v. fall sown (39) 836.
- sprouted—
 - amino acid in, (33) 665.
 - composition, (39) 74.
 - for fowls, (29) 696; (30) 373; (36) 75.
- statistical notes, (40) 626.
- stooling, (27) 735.
- subsoiling experiments, (31) 41, 131; (37) 732.
- sugar as fertilizer for, (27) 722.
- sulphur bleached germination tests, (27) 142.
- sulphur in, (31) 817.
- susceptibility to powdery mildews, (38) 645.
- Swiss types, (27) 338.
- threshing in variety tests, (36) 534.
- thrips affecting, (27) 452; (28) 452; (31) 351.
- transpiration, (34) 522; (39) 517.
- use in bread making, (40) 360, 863.
- utilization of different phosphates by, (31) 733.

rats—Continued.

- v. bran for milk production, (30) 576.
- v. corn for mules, (30) 772.
- v. corn for pigs, (31) 363.
- v. corn for work horses, (37) 195.
- v. spring wheat, (40) 443.
- valuation, (26) 267.
- value in the diet, (29) 660.
- variations in, (31) 832; (32) 736, 737.
- varieties, (26) 39, 232, 233, 331, 629, 632, 733, 828, 835; (27) 32, 137, 138, 234, 334, 337, 530, 531, 532, 637, 638, 735, 736, 834; (28) 431, 532, 534, 636, 735, 827; (29) 31, 36, 137, 138, 222, 225, 228, 425, 428, 530, 735, 736, 738, 831; (30) 33, 134, 135, 229, 235, 434, 435, 527, 829; (31) 226, 430, 434, 435, 527, 631, 829, 832; (32) 36, 37, 224, 333, 431, 527, 528, 529, 530, 631, 730, 731, 827; (33) 32, 33, 34, 330, 431, 631, 632, 633, 728, 828, 831; (34) 138, 227, 228, 229, 629, 631, 733, 735; (35) 31, 32, 33, 34, 229, 336, 526, 528, 637, 826; (36) 32, 33, 34, 36, 132, 133, 336, 435, 437, 529, 634, 735, 828, 830; (37) 29, 30, 32, 33, 132, 134, 135, 227, 228, 229, 329, 330, 332, 436, 438, 530, 537, 635, 640, 641, 731, 823; (38) 30, 32, 131, 135, 229, 234, 240, 333, 432, 433, 632, 634, 636, 740, 830, 832.
- varieties—
 - classification, (36) 833.
 - for Alaska, (39) 124, 125, 126.
 - California, (26) 233.
 - Montana dry lands, (35) 735.
 - moor culture, (39) 438.
 - New South Wales, (27) 338; (38) 528.
 - the Dakotas and Montana, (38) 230.
 - Utah dry lands, (38) 230.
- identification, (40) 238.
- in Argentina, (40) 630.
- new Swedish, (39) 634, 833.
- resistant to fungi, (31) 50.
- resistant to rust, (26) 447; (30) 230; (38) 849.
- resistant to smut, (32) 49.
- variety tests, (39) 127, 128, 129, 130, 136, 227, 228, 333, 334, 336, 337, 435, 436, 437, 634, 639, 735, 737, 738, 835; (40) 32, 138, 228, 233, 328, 332, 431, 624, 728, 729, 730, 731, 732, 733, 735.
- variety tests—
 - experimental error, (39) 830.
 - rod-row method, (40) 233.
 - technique, (40) 227.
- vitality as affected by age, (27) 334.
- volume weight and grain characteristics, (37) 643.
- water requirements, (26) 129; (29) 826; (32) 127, 335, 813; (34) 720; (35) 633; (38) 227; (40) 630.
- water requirements in India, (27) 429.
- weed seeds in, (26) 135.
- weight as affected by fertilizers, (31) 136.
- wild—
 - analyses, (32) 169.
 - and cultivated, intermediate form, (28) 636.
 - and false wild, notes, (27) 641.
 - eradication, (30) 531; (38) 38; (39) 744; (40) 630.
 - geographical distribution, (26) 334.
 - germination studies, (31) 235, 624.
 - germinative qualities, (29) 135.
 - percentage of kernels, (40) 731.
 - studies, (29) 337, 538.
- wilting coefficient, (32) 335.
- winter, northern limits in United States, (37) 533.
- Worthy, in Michigan, (39) 335.
- yield as affected by—
 - dynamiting, (32) 430.
 - ground water levels and soil aeration, (27) 20.
 - pasturing, (30) 633.
 - physical properties of soils, (33) 815.
 - rainfall, (34) 319.
 - sulphur, (34) 726; (35) 529.
 - water table, (29) 427.
 - weight of seed, (33) 335.
- yield—
 - of light and heavy seeds, (27) 138.
 - of plump v. shrunken seed, (27) 734.
 - on alfalfa stubble, (33) 828.
 - tests, experimental error, (39) 830.
- yields, (27) 734; (28) 533; (29) 32, 138; (34) 228; (40) 735.
- yields in Australia, (38) 133.
- yields in Chester Co., Pennsylvania, (39) 621.

- Oberea tripunctata—
 - life history, (33) 861.
 - notes, (28) 156.
- Obrussa sp., notes, (37) 564.
- Ocean spindrift and blown spray, effect on chlorin content of inland waters, (31) 813.
- Ocean temperatures on California Coast, (28) 716.
- Oceanic circulation and temperatures, (34) 615.
- Oceanic noises, (34) 117.
- Oceanodroma leucorhoa subsp., notes (38) 556.
- Oceanographical research, new instruments for, (37) 513, 807.
- Ocellaria vanillae, description, (27) 450.
- Ochocho irrigation project, (35) 385.
- Ochre as priming for paint, (33) 90.
- Ochroma—
 - lagopus, microscopical structure, (35) 241.
 - synopsis and new species, (40) 542.
- Ochsen, analyses, (27) 767.
- Oechthiphilinae, synopsis, (29) 657; (30) 254.
- Ocinara lewiniae, injurious to horses, (26) 456.
- Oenoserostoma pinariella, notes (34) 855.
- Octaacetylglentibiose, notes, (31) 310.
- Octolasmus cyaneum, carbon dioxide exhalation of, (26) 619.
- Octotoma plicatula, notes (27) 347.
- Ocular infections, dichloramin-T for, (39) 185.
- Ocymum basilicum, oil of, (36) 803.
- Ocypteromima n. g. and n. sp., description, (37) 359.
- Odina woder, gums of, (31) 409.
- Odonaspis ruthae n. sp., description, (34) 357.
- Odonata—
 - biology, (39) 558.
 - of southern Minnesota, (32) 753.
 - review of investigations, (31) 452.
- Odontia—
 - sacchari and O. saccharicola n. spp., descriptions, (38) 649.
 - saccharicola, notes (40) 848.
 - saccharicola, studies, (38) 851.
 - spp. on sugar cane, (40) 157.
- Odontobracon oemeovorus n. sp., description, (38) 165.
- Odontoglossum crispum, culture, (34) 741.
- Odontomerus strangaliae n. sp., description, (38) 164.
- Odontopharynx longicauda n. g. and n. sp., notes, (29) 360.
- Odontria—
 - puncticollis, n. sp., description, (31) 159.
 - spp., notes, (30) 554.
 - zealandica, notes, (28) 757.
- Odynerus chevrierianus, parasitic on Cochylis ambigua, (27) 263.
- Oecanthus—see also Tree crickets.
 - spp., notes, (29) 354.
 - spp., studies, (31) 649; (33) 653.
- Oeceticus—
 - omnivorus, notes, (38) 257.
 - platensis, control by parasites, (40) 855.
 - platensis, notes, (27) 559.
 - platensis, remedies, (38) 658.
- Oecodoma cephalotes, studies, (31) 656.
- Oecophora sulphurella, notes, (27) 552.
- Oecophyllembius neglectus, enemies of, (28) 560.
- Oedaleus nigrofasciatus, destruction by Coccobacillus acidiorum, (33) 154.
- Oedanometer, description, (35) 28.
- Oedemagena—
 - tarandi, notes, (30) 457.
 - terraenovae n. sp., description, (30) 457.
- Oedionychis sexamaculata, notes, (37) 255.
- Oedipoda nebrascensis, see Dissosteira longipennis.
- Oedipodinae, egg-laying habits, (39) 656.
- Oedocephalum (Botrytis) anthophilum n. sp., description, (36) 748.
- Oemethylus triangularis, notes, (26) 657.
- Oenophthira pilleriana—
 - notes, (27) 57; (34) 63.
 - parasites of, (35) 659.
- Oenothera—
 - absence of apogamy in, (30) 631.
 - as affected by climate, (28) 733.
 - biennial habit, constancy, (29) 424.
 - biennis—
 - fasciation in, (39) 330.
 - mutation coefficient of, (33) 129.
 - parallel mutations in, (28) 39; (32) 131.
 - stomatal movement in, (26) 627.

• *Oenothera*—Continued.

- breeding experiments, (34) 732; (39) 527, 632, 825.
- dimorphic mutants, (37) 131.
- embryo sac and fertilization, (40) 521.
- factors affecting development, (26) 728.
- genetical studies, (32) 326.
- germ plasma as affected by chemicals, (39) 30.
- gigantism and tetraploidy in, (29) 321.
- gigas, origin, (28) 40.
- grandiflora of herbarium of Lamarck, (32) 822.
- hybrid contamination in, (32) 521.
- hybridization experiments, (38) 28, 331.
- hybrids, dwarfs in, (35) 330.
- hybrids, segregation of characters in, (30) 730.
- hybrids, studies, (32) 628.
- inheritance of characters in, (34) 823.
- lamarckiana—
 - as nuclear chimera, (39) 226.
 - origin, (29) 135; (31) 523.
 - semigigas, notes, (28) 40.
 - variability of, (28) 430.
- mass mutations and twin hybrids, (40) 132.
- mucilage of, (40) 819.
- mutants with diminutive chromosomes, (37) 433.
- mutation in, (31) 35; (32) 426; (33) 28, 129, 221, 524, 630; (34) 629; (35) 128; (36) 222; (37) 328, 724; (39) 527, 632.
- mutational characters, relation to cell size, (40) 323.
- nanella—
 - dimorphism in, (27) 30.
 - notes, (27) 528.
 - symbiosis with fungi, (27) 751.
- negative correlation in, (32) 521.
- rubricalyx, origin and behavior, (34) 226.
- seeds, germination, (34) 135.
- segregation in, (39) 123, 825.
- spp. in forest of Fontainebleau, (32) 726.
- sterility and delayed germination in, (35) 223.
- twin hybrids in, (37) 820.
- variation in, (37) 525.
- Oesophagodontus robustus*, notes, (39) 686.
- Oesophagostomum*—
 - biramosum, notes, (27) 259.
 - columbianum, life history and structure, (29) 476.
 - columbianum, notes, (27) 182; (37) 779.
 - spp. in Philippines, (37) 277.
 - spp., notes, (29) 287.
 - venulosum, destructive to deer, (26) 653.
- Oestridae, notes, (27) 53, 656.
- Oestrinae of Africa, (38) 263.
- Oestrinae of Brazil, (40) 458.
- Oestrous cycle—
 - in the guinea pig, (40) 467.
 - ovarian factor in, (32) 861.
- Oestrus—
 - effect on milk and butter production, (34) 670.
 - in swine, (40) 663.
 - macropi n.sp., notes, (29) 761.
 - ovis, life history and remedies, (29) 761.
 - ovis, notes, (26) 731; (27) 182; (29) 856.
- Offals, analyses, (26) 809.
- Office of Experiment Stations, Office of Farm Management, etc., see United States Department of Agriculture.
- Official Dairy Instructors' Association, (35) 799.
- Ohia lehua trees of Hawaii, (38) 45.
- Ohio—
 - Engineering Society, report, (36) 384.
 - State Grange, Columbus, meeting, (26) 1.
 - State University, notes, (25) 397, 797; (27) 199, 398, 699, 799; (28) 397, 797; (29) 98, 398, 700; (30) 95, 397, 798; (31) 198, 399, 797, 900; (32) 198, 397, 798; (33) 399, 796; (34) 199, 296, 496; (35) 97, 197, 597, 900; (36) 99, 500, 599; (37) 98, 498, 797; (38) 499, 700; (39) 300; (40) 498, 698.
- Station—
 - anniversary, (29) 106.
 - county experiment farm reports, (39) 799.
 - exhibit at county fairs, (26) 259.
 - financial statement, (26) 299; (29) 793.
 - monthly bulletin, (39) 94, 299, 598, 799, 899; (40) 198, 296, 397, 694, 797.
 - notes, (26) 800, 397, 695; (27) 99, 493, 799; (28) 797; (29) 98, 196, 398, 700; (30) 95, 798; (32) 397, 798; (33) 399, 796; (34) 199, 296, 695; (35) 400, 597; (36) 196, 696; (37) 98, 498, 797; (39) 97, 600.

Ohio—Continued.

- Station—Continued.
 - report, (31) 98; (32) 796; (34) 494; (36) 195; (38) 197; (40) 198.
 - report of director, (26) 299; (29) 793.
- Valley flood of March-April, 1913, (30) 18.
- Oidiomycosis in cattle, (38) 179; (40) 88.
- Oidiopsis taurica, conidiophores of, (27) 351.
- Oidium—
 - agatidis n.sp., description, (30) 51.
 - alphitoides, notes, (27) 351.
 - begoniae n.sp., description, (27) 848.
 - caricae, notes, (29) 243.
 - citri, notes, (38) 849.
 - ericinum, notes, (27) 649; (29) 49.
 - euonymi japonici, notes, (37) 550.
 - euonymi japonici, treatment, (37) 246.
 - farinosum, notes, (28) 447.
 - farinosum, parasite of, (31) 544.
- lactis—
 - action on phenylaminoacetic acid, (33) 503.
 - as affecting butter, (39) 785.
 - assimilation of atmospheric nitrogen by, (30) 629.
 - assimilation of nitrogen by, (28) 35.
 - biology, (40) 518.
 - growth in different media, (28) 824.
 - growth in presence of salt, (32) 176.
 - isolation from cheese, (26) 479.
 - itinerary in butter manufacture, (39) 78.
 - notes, (26) 881.
 - protein synthesis by, (27) 525.
 - solani n.var., description, (32) 644.
 - varieties of, (28) 276.
- quercinum—
 - in northern France, (31) 546.
 - notes, (30) 653, 746.
 - on chestnut, (38) 455.
- resistance of oaks to, (40) 253.
- sp., notes, (27) 40.
- sp. on carnations, (36) 547.
- sp. on *Photinia serrulata*, (36) 546.
- sp. on sweet peas, (32) 446.
- tingitium n.sp., description, (34) 447.
- treatment, (26) 345.
- tuckeri—
 - notes, (28) 245; (33) 545; (35) 550.
 - occurrence in Poland, (26) 845.
 - studies, (30) 845.
 - treatment, (28) 851; (34) 748, 841.
- use of powdered fungicides against, (30) 651.
- Oiketicus poeiyi*, notes, (27) 756.
- Oil—
 - adulteration, detection, (38) 412.
 - adulteration, determination, (26) 114.
 - antiseptics, germicidal power, (40) 882.
 - avocado, digestibility, (40) 763.
 - bearing seeds of Philippines, (35) 312.
 - burning in boiler furnaces, (26) 384.
- cake—
 - analyses, (30) 67.
 - export from India, (33) 327.
 - fertilizing value, (27) 336; (38) 433.
 - for cows, (29) 577.
 - meal, methods of analysis, (29) 311.
 - meals, analyses, (30) 270.
 - mold fungi in, (31) 377.
- cakes—
 - availability of phosphoric acid in, (26) 428.
 - Chinese, analyses, (35) 523.
 - composition and use, (27) 727.
 - effect on milk, (28) 674.
 - feeding value, (38) 572.
 - methods of analysis, (29) 311.
- Chinese wood, polymerization, (34) 607.
- content of egg yolk, (20) 67.
- content of papilionaceous seeds, (27) 716.
- crops, variety tests, (39) 433.
- determination in foliage, (36) 710.
- determination in grains, (29) 507.
- drying, from oilteica, (39) 609.
- effect on fertilizing value of street sweepings, (27) 629.
- emulsion dips, notes, (30) 778.
- emulsion, preparation and use, (29) 585; (31) 740; (37) 143.
- emulsions, use with lime-sulphur, (40) 453, 454.
- extraction apparatus, description, (39) 9.
- extraction by aspiration, (30) 115.
- from aleurone cells of grain, (40) 714.
- apple and pear seeds, (40) 511.

Oil—Continued.

- from cactus, (33) 234.
- Camelia drupifera, (39) 501.
- cherry pits, (39) 8.
- dogfish, (32) 424, 722.
- dogfish liver, analyses, (39) 712.
- fruit seeds, (40) 511, 614, 803.
- gourd seed, (39) 9.
- hops, chemistry of, (31) 201.
- loganberries, (39) 412.
- manatee blubber, (40) 862.
- Mgongo nuts, (40) 803.
- Para rubber seed, (39) 417.
- raisin, currant, and tomato seeds, (40) 803.
- raisin seed, (39) 615.
- rice pollshings, (39) 109.
- sunflower seed, (40) 533.

fuel, tests, (28) 486.

globules, elaboration in *Iris germanica*, (34) 524.

heavy, as fuel for engines, (30) 188.

hydrogenated, digestibility (34) 659.

in sandalwoods, (33) 444.

industry, statistics, (39) 9.

insecticides, effect on citrus fruits, (29) 354.

inspectors, charts for, (38) 492.

laws in Wyoming, (31) 259.

leaf, of Douglas fir, (31) 201.

mustard, metabolism, (39) 668.

mustard, skin lesions caused by, (39) 585.

of black sage, investigations, (33) 202.

of cassia, constituents of, (34) 501; (40) 202.

of chenopodium—

composition, (28) 506.

effect on circulation and respiration, (34)

476.

effect on intestinal contractility, (34) 381.

studies, (39) 585.

of citronella, effect on fruit flies, (28) 455.

cloves, determination, (29) 798.

cloves, larvicidal value, (34) 359.

cotton plant, studies, (39) 411.

Douglas fir, composition and properties, (27)

115.

lavender, detection in ethyl alcohol, (29) 312.

lemon, adulteration, (28) 461.

rosemary, detection in ethyl alcohol, (29) 312.

orchard heating, use against wild garlic, (31) 739.

palm, notes, (40) 449, 542.

palm of tropical Africa, studies, (31) 143.

palm, propagation and yields, (37) 835.

palms, improvement, (28) 736.

palms, insects affecting, (33) 153.

plants, culture experiments, (31) 733.

plants of Indo-China, (37) 830; (40) 333.

pressure method for soil solution, (39) 20.

rot, studies, (27) 850.

seed crops for Rhodesia, (40) 333.

seed plant, culture experiments, (39) 229.

seeds—

and feeding cakes, treatise, (34) 565.

breeding experiments, (38) 526.

culture experiments, (38) 526; (39) 229.

determining oil content, (40) 803.

from American palms, (36) 803.

Indian trade in, (40) 231.

new, analyses, (39) 802.

of Brazil, (37) 511.

of British tropical dependencies, (31) 234.

sprays, preparation and use, (31) 63.

tractors for the farm, (29) 893.

Oils—see also Fats, Corn oil, Cottonseed oil, etc.

acetyl number, determination, (31) 713.

and fats—

edible, (39) 366, 411.

for the diet, (40) 863.

handbook, (40) 804.

methods of analysis, (40) 312.

methods of analysis, handbook, (39) 207, 504.

of French colonies, saponification, (39) 411.

optical dispersion, (40) 113.

production and conservation in United

States, (40) 614.

specific heat, (40) 68.

technical handbook, (39) 8.

Valenta test, (39) 110, 504, 805.

animal, effect of free fatty acids on, (34) 312.

attractiveness for fruit flies, (32) 153.

Oils—Continued.

carotin in, (39) 713.

chemical technology of, (29) 413.

chemistry of, (31) 201.

color tests, (37) 13.

crude, as preservative for poles, (26) 644.

crude, evaporation, (26) 644.

determination—

in extracts, (27) 499.

of saponification value, (34) 410.

of specific gravity, (35) 806.

of unsaponifiable matter in, (33) 17, 506;

(37) 805.

edible, analyses, (32) 762.

edible, chemistry of, (35) 9.

edible, treatise, (26) 258.

effect on concrete, (29) 184, 891.

effect on mold growth, (26) 206.

essential—

chemistry of, (36) 12.

determination, (26) 113; (34) 808.

determination in alcoholic solutions, (26) 99.

determination in flavoring extracts, (39) 505.

determination in mustard, (30) 114.

determination in spices, etc., (29) 309.

determination of iodine number, (33) 112.

formation in relation to light, (33) 726.

from limes and lemons, (33) 540.

in India, (38) 8.

methods of analysis, (27) 205.

of Australian Myrtaceae, (36) 710.

of eucalypts, (33) 646.

relation to sap flow, (27) 133.

role of oxidases in, (28) 129.

use in preparation of vaccine, (35) 380.

etheral—

in spruce wood, (29) 504.

of Dutch East Indies, (30) 697.

of Russia, (36) 803.

examination, (28) 565.

fatty—

and essential, notes, (35) 9.

deodorizing, (39) 508.

notes, (37) 109.

refractive indexes, (27) 614.

fish-liver, nutritive value, (40) 66.

for internal combustion engines, (29) 892.

from horsemint and ajowan seed, (39) 712.

from seed, digestibility, (39) 571.

glycerids of, (32) 801.

hardened, digest of data, (31) 856.

hardened or solidified, notes, (28) 616.

hardening by hydrogenation, (28) 762.

heat of bromination, (34) 803.

hydrocarbon, treatise, (30) 313.

hydrogenated—

analytical constants, (32) 416.

as human food, (32) 660.

properties, (34) 9.

hydrogenation, (29) 413, 459; (36) 414.

hydrogenation, treatise, (32) 416.

illuminating, law in Wyoming, (27) 767.

in cookery, (35) 366.

insecticidal value, (27) 755.

inspection in Iowa, (36) 762.

inspection in Wisconsin, (35) 471.

laboratory handbook, (29) 811.

law in Oregon, (35) 471.

law in Wyoming, (35) 663.

laws in Ohio, (33) 261.

lubricating, for internal combustion engines,

(32) 86.

methods of analysis, (26) 202; (30) 314; (31) 509;

806; (32) 314; (33) 258; (35) 205; (36) 205; (38)

206, 804.

mineral, see Mineral oils.

miscible, effect on dormant trees, (29) 354.

miscible, effect on trees, (33) 252.

nut, digestibility, (38) 867.

of British tropical dependencies, (31) 234.

Coniferae, (33) 18, 203, 409; (34) 607.

Dutch East Indies, (30) 697.

Malvaceae, (36) 803.

oxygen absorption by, (29) 613.

petroleum, fractionating apparatus, (39) 414.

physical and chemical constants, (36) 502.

physical constants, (32) 300.

plant, of Russia, (36) 802.

Oils—Continued.

- production in plants, (33) 629.
- rancid, evaluation, (37) 114.
- sampling, (38) 206, 804.
- soluble, insecticidal value, (37) 53.
- spontaneous combustion, (37) 788.
- storage changes in, (36) 502.
- sulphonated, methods of analysis, (35) 316.
- sulphuric acid or Maumené number, (37) 805.
- technology and analysis, treatise, (34) 507.
- testing, (37) 13.
- tests, (26) 202, 539.
- treatise, (30) 310.
- use on roads, (35) 288; (37) 490.
- varnish, estimating, (39) 613.
- vegetable—
 - accessory growth substance in, (38) 265.
 - and fats, edible, treatise, (28) 511.
 - bromin absorption by, (29) 612.
 - composition in relation to climate, (37) 418.
 - hydrogenation, (29) 413.
 - hydrolysis and constitution, (27) 804.
 - molecular weights, (35) 312.
 - of India, (29) 413.
 - production and consumption in United States, (40) 614.
 - systematic arrangement, (33) 630.
- viscosity, determination, (39) 716.
- volatile—
 - determination in citrus fruits, (38) 11.
 - determination in liquors, (35) 111, 717.
 - production from wild plants, (26) 612.
 - treatise, (30) 310, 710.
 - wood preserving, antiseptic tests, (29) 111.
- Oistus edmonstoni n.sp., description, (40) 655.
- Oiticica oil, properties, (39) 609.
- Oka Agricultural Institute, Quebec, (32) 895.
- Okanagana viridis n.sp., description, (40) 856.
- Oklahoma—
 - College, notes, (27) 699; (28) 698, 798; (29) 196, 398, 900; (31) 300, 696; (32) 95, 397, 497; (33) 99, 700; (34) 97; (35) 197; (36) 797; (37) 399, 797; (38) 98; (39) 300, 400; (40) 98, 498.
 - Station, financial statement, (27) 299; (28) 695.
 - Station, notes, (26) 397, 599; (27) 699; (28) 698; (29) 398; (31) 300, 696; (32) 95, 397, 497, 798; (33) 99; (34) 296; (36) 797; (37) 399, 797; (38) 98, 600; (39) 300, 400; (40) 98.
 - Station, report, (30) 598; (40) 97, 694.
 - Station, report of director, (27) 299; (28) 695.
- Okra—
 - breeding experiments, (36) 839; (39) 747.
 - culture experiments, (37) 742.
 - culture in Porto Rico, (36) 341.
 - caterpillar, life history, (38) 562.
 - disease, new, studies, (39) 649.
 - disease, notes, (30) 149.
 - fertilizer experiments, (37) 742.
 - heredity in (27) 740; (28) 740; (32) 538.
 - insects affecting, (29) 653.
 - seed, impermeable, viability, (35) 740.
 - Verticillium wilt, studies, (33) 244.
 - wilt, description, (26) 844.
 - wilt disease, studies, (38) 851.
 - wilt diseases, notes, (31) 343.
- Oleaginous fruits, formation of fats in, (26) 801; (29) 201.
- Oleander—
 - bacteriosis, notes, (30) 751; (36) 453.
 - canker, description, (37) 252.
 - canker, description and treatment, (29) 156.
 - poisoning in horses, (34) 780.
 - scale, notes, (28) 834; (29) 654; (32) 56.
 - scale on olive, (38) 157.
- Oleanders—
 - crown gall affecting, (28) 447.
 - destruction by black scale, (26) 555.
 - sap, bark, and seeds of, (28) 202.
- Oleaster, Russian, notes, (29) 441.
- Oleate, proflavin, in wound treatment, (40) 882.
- Oleic acid—
 - and cottonseed oil, hydrogenation of, (34) 10.
 - oxidation in sunlight, (32) 762.
 - relation between iodine value and structure, (28) 806.
 - separation from fatty acids, (26) 112.
- Olein content of egg yolk, (26) 67.
- Oleo—
 - decision of New York Supreme Court, (28) 277.

Oleo—Continued.

- oil, accessory growth substance in, (38) 265.
- oil, refractive index, (27) 615.
- Oleomargarine—see also Margarin.
 - analyses, (39) 366.
 - color standard, (27) 575.
 - detection of color in, (35) 278; (36) 16; (39) 416.
 - industry in United States, (35) 278.
 - law in Illinois, (29) 61.
 - manufacture, (29) 770.
 - manufacture in Canada, (28) 278.
 - sale in Pennsylvania, (32) 763.
 - treatise, (31) 176.
 - use of fish oil in, (33) 363.
 - viscosity, (31) 209.
- Oleoresins—see also Resins.
 - chemistry and technology, (39) 8.
 - of Douglas fir, (37) 411.
 - of western pines, (28) 512; (31) 744.
- Oleostearin, refractive index, (27) 615.
- Olericulture as field for study, (39) 542.
- Olesicampa flaviventris, notes, (28) 249.
- Olethreutes—
 - frigida, notes, (32) 448.
 - (Grapholitha) schistaceana, notes, (34) 758.
 - hebesana, studies, (33) 255.
 - hemidesma, notes, (39) 361.
 - oblongana, notes, (35) 463.
 - variegana, studies, (40) 551, 653.
- Oleum lauri as an insecticide, (26) 755.
- Oleuropeine, notes, (32) 209.
- Olibrus sp., destruction by white fungus, (26) 454.
- Oligia fractilinea, see Hadenia fractilinea.
- Oligoclase, decomposition by soil bacteria and yeast, (31) 121.
- Oligosita—
 - giraulti n.sp., description, (30) 256.
 - giraulti, notes, (30) 251.
 - oophagus n.sp., description, (36) 259.
 - sanguinea claripeis n.sp., description, (34) 556.
- Oligota oviformis—
 - notes, (28) 457.
 - parasitic on red spider, (32) 157.
- Oligotrophariæ of New York, (34) 752.
- Oligotropus alopecuri, notes, (37) 463.
- Olive—
 - bacteriosis, treatment, (27) 251.
 - blooms, toxic action of sulphurous anhydrid on, (33) 447.
 - by-products, analyses and nutritive values, (28) 265.
 - diseases—
 - and insect pests, (34) 535.
 - manual, (39) 457.
 - notes, (26) 844.
 - studies, (26) 849; (33) 524.
 - treatise, (32) 344.
 - treatment, (26) 850.
 - exanthema or dieback, studies, (32) 238.
 - flower stigmas, dying, notes, (30) 245.
 - fly, feeding habits, (26) 252.
 - fly, notes, (32) 56.
 - fly, parasites of, (28) 560; (33) 658.
 - fly, remedies, (26) 252; (27) 58; (30) 254, 757; (31) 757; (35) 57.
 - forests in Punjab, (34) 535.
 - fruit fly, danger of introduction, (39) 467.
 - husks, detection in pepper, (26) 805.
 - industry in Corfu, (26) 138.
 - industry in Italy, (31) 142.
 - industry in Spain in 1915, (35) 744.
 - knot disease, dissemination, (27) 652.
 - knot, studies, (28) 54; (34) 241.
- oil—
 - adulteration, (31) 505.
 - analyses, (32) 762.
 - bleaching and decolorization, (29) 118.
 - detection, (27) 207; (29) 613.
 - detection of rape oil in, (39) 804.
 - digestibility, (36) 860.
 - examination, (26) 564.
 - extraction, (26) 414; (27) 744, 814; (30) 115; (32) 142.
 - homogenized, for infants, (34) 258.
 - humification, (38) 26.
 - index of refraction, (37) 508.
 - industry in Algiers, (27) 313.
 - industry in Spain in 1915, (35) 744.
 - industry, statistics, (39) 9.
 - ingestion, effect on metabolism, (28) 867.

- Olive**—Continued.
 oil—continued.
 manufacture, (27) 438.
 physical constants, (35) 312.
 oil, production—
 and use, (37) 511.
 in Spain, (27) 344; (29) 439; (31) 238; (33) 539.
 in Tunis, (31) 339.
 in United States, (40) 614.
 oil—
 rancidity, (32) 762.
 refractive index, (27) 615.
 residue as source of potash, (40) 422.
 residue, fertilizing value, (40) 26.
 rôle in glycogen formation, (31) 763.
 stability, (39) 471.
 standards for, (26) 564.
 toxicity, (30) 479.
 paste, manufacture, (32) 209.
 pomace for pigs, (34) 74.
 pomace, utilization, (36) 809.
 scale, black, in Chile, (40) 651.
 scale, parasite of, (26) 655.
 seed, germination of, (32) 235.
 seedlings as affected by metallic salts, (26) 825.
 seedlings, growing and grafting, (35) 239.
 sooty mold, remedies, (36) 754.
 thrips, endophagus parasite of, (26) 553.
 weevil, nematode parasite of, (32) 453.
- Olives**—
 and oaks growing in close proximity, (35) 654.
 as affected by cold storage, (29) 340.
 bitter principles, (32) 209.
 botanical studies and varieties, (39) 243.
 chemistry of, (26) 801.
 crown gall affecting, (28) 447.
 culture, (27) 438; (29) 426; (32) 142; (34) 535.
 culture—
 in Austria, (32) 838.
 California, (28) 839.
 Crimea, (37) 144.
 environs of Trapani, (35) 449.
 southern Texas, (32) 539.
 Spain, (27) 344; (29) 439; (31) 238; (33) 539; (37) 545; (39) 142, 447.
 Tunis, (31) 339, 534.
 destruction by black scale, (26) 555.
 destruction by termites, (28) 563.
 fertilizers for, (36) 538.
 floral biology, (28) 743.
 floral biology and pathology of, (33) 524.
 food plant of purple scale, (26) 756.
 freeze injury, notes, (39) 843.
 graft hybrids, (39) 447.
 immature, labeling, (36) 139.
 improvement, (28) 736.
 insects affecting, (27) 55, 357, 857; (30) 454; (34) 535; (35) 254; (38) 157; (40) 854.
 newly planted, sun scald of, (35) 538.
 nitrogen nutrition of, (35) 839.
 oil content, (37) 43.
 parthenogenesis in, (27) 241.
 pickled, sizing, (32) 209.
 pickling, (32) 142; (38) 617.
 preservation, (26) 117.
 preservation by lactic-acid fermentation, (29) 117.
 propagation, (33) 540.
 pruning in Italy, (27) 644.
 sizing, (34) 740.
 softening, (32) 209.
 varietal standardization, (36) 537.
 varieties, classification, (27) 145.
- Olivine**, decomposition by soil bacteria and yeast, (31) 121.
- Olla abdominalis**, notes, (31) 754.
- Olona** as fiber plant, (40) 529.
- Olor columbianus** on the Potomac, (40) 161.
- Olipidium**—
 brassicae, notes, (37) 455.
 viciae n.s.p., description, (28) 649.
- Olpitrichum** carpophilum, notes, (28) 648.
- Omiodes**—
 accepta, notes, (26) 758.
 blackburni in Hawaii, (34) 59.
 monogona, notes, (27) 155.
- Omisus** murarios, notes, (38) 558.
- Ommatothrips** n.g. and n.s.p., descriptions, (34) 61.
- Omorga** frumentaria, parasitic on fig moth, (26) 248.
- Omorgus**—
 n.s.p., descriptions, (34) 363.
 sp., notes, (28) 160.
- Omphalchrysocharis** petiolatus n.s.p., description, (39) 870.
- Omphale** metallicus, notes, (30) 856.
- Omphalia** flavida n.s.p., notes, (30) 652.
- Omphalocera** dentosa, notes, (26) 855; (30) 655.
- Onagraceae**—
 hybrid contamination in, (32) 521.
 interspecies crossing in, (35) 228.
- Onchocera**—
 bovis in Madagascan cattle, (28) 182.
 bovis, notes, (27) 83.
 gibsoni—
 control, (39) 862.
 notes, (28) 680; (31) 182; (33) 154; (34) 581, 582.
 parasitic in sheep, (27) 475.
 studies, (26) 183; (32) 376, 377; (38) 82.
 transmission, (37) 181.
 larvae, migration through capsule of worm nodule, (34) 576.
 spp., studies, (34) 582.
- Onchoericiasis**—
 bovine, etiology, (27) 785.
 bovine, in Argentina, (38) 183.
 bovine, in South America (37) 80.
 in cattle, (34) 581, 582; (36) 883; (39) 589.
 in imported meat, (27) 83.
- Oncideres**—
 cingulatus, notes, (27) 458; (37) 660; (38) 762.
 cingulatus on pecan, (38) 157; (39) 557.
 putator, studies, (33) 63.
 texana, life history, (35) 661.
- Oncopsis** sobrius, notes, (40) 57.
- Oncothrips** tepperi n.g. and n.s.p., description, (26) 60.
- Onion**—
 anthracnose, studies, (37) 841; (39) 754.
 bacterial rot and damping off, (37) 452.
 bacterial rot, notes, (40) 155.
 black mold, notes, (37) 349.
 bulb scales, permeability, (39) 223.
 bulbs, transportation regulations, (30) 346.
 couch, notes, (27) 35; (32) 121.
 diseases in Ohio, (40) 747.
 diseases, notes, (30) 647; (31) 747; (38) 648.
 diseases, studies, (38) 249.
 diseases, treatment, (39) 52.
 flies, notes, (29) 454.
 fly, barred-winged, notes, (34) 360.
 fly, lunate, in New Jersey, (40) 654.
 fly, lunate, notes, (28) 158.
 Fusarium rot, notes, (36) 47.
 industry in Barbados, (28) 828.
 industry in California, (39) 345.
 maggot—
 imported, biology, (33) 746.
 imported, notes, (29) 454; (36) 657; (40) 648.
 life history and remedies, (33) 357; (34) 360.
 notes, (26) 855; (27) 53; (31) 350; (34) 252.
 remedies, (30) 160; (31) 757, 849; (33) 351; (38) 155, 863.
 mildew, notes, (27) 349.
 mildew, studies, (37) 553.
 neck rot, control, (39) 754.
 neck rot, studies, (35) 547; (38) 450.
 pink root, notes, (37) 841; (40) 643.
 scab, notes, (31) 539.
 seed, germination tests, (25) 44.
 seed, production, (27) 438; (33) 226.
 seed, vitality, (36) 39.
 seedlings, damping off disease of, (35) 44.
- smut**—
 description and treatment, (27) 445; (29) 245.
 notes, (36) 349.
 prevention, (26) 299.
 studies, (33) 344.
 treatment, (31) 840; (32) 342; (33) 245.
- spot** disease, treatment, (29) 245.
- thrips**—
 control, (40) 548.
 description and remedies, (29) 453.
 internal parasite of, (26) 858.
 notes, (27) 53; (29) 252, 558; (30) 753; (31) 350; (32) 755; (34) 360, 652; (38) 556.
 on leeks, (32) 553.
 remedies, (30) 654.

Onions—

- alkali tolerance, (40) 719.
- as affected by preceding crop, (40) 623.
- ash analyses, (29) 861.
- bacterial disease affecting, (26) 846.
- Bernuda—
 - culture experiments, (29) 235.
 - culture in south Texas, (34) 437.
 - seed production, (38) 344.
- breeding experiments, (37) 240; (39) 542.
- carbon bisulphid for, (40) 619.
- catalytic fertilizers for, (27) 629.
- composition as affected by—
 - irrigation, (28) 333.
 - sodium salts, (29) 419.
- cost of growing and marketing, (36) 192.
- critical period of growing season, (39) 811.
- culture, (26) 393; (27) 39; (31) 740, 836; (34) 41; (36) 640; (40) 833.
- culture—
 - experiments, (29) 137; (32) 132, 140; (33) 43; (35) 341, 643; (37) 646, 742.
 - in Antigua, (36) 735.
 - Burma, (29) 736.
 - Connecticut Valley, (36) 840.
 - India, (32) 131.
 - on muck lands, (31) 533.
 - treatise, (33) 837.
 - under irrigation, (28) 839.
- effect on following crop, (38) 337; (40) 623.
- electrical stimulation, (40) 428.
- fertilizer experiments, (26) 31; (28) 520; (30) 525; (32) 635; (33) 43; (34) 532; (35) 338, 643; (36) 137; (37) 215, 742; (38) 218, 540.
- fertilizer requirements, (26) 818.
- food value, (36) 863.
- forcing by electricity, (26) 136.
- growth as affected by sulphur, (29) 215.
- growth on acid soil, (40) 324.
- growth on partially sterilized soils, (35) 515.
- insects affecting, (29) 453; (34) 360; (36) 152.
- insects affecting in Antigua, (39) 556.
- irrigation, (31) 782.
- irrigation experiments, (28) 131, 134, 135; (29) 638.
- liming experiments, (31) 820; (40) 134.
- mulching v. clean culture, (33) 534.
- nematodes affecting, (30) 448.
- radioactive fertilizers for, (35) 628.
- respiratory activity in sunlight, (34) 30.
- ridge v. level culture, (33) 535.
- storage, (34) 637; (39) 770.
- sugar content as affected by drying, (29) 419.
- value in the diet, (29) 664.
- varieties, (30) 525; (31) 835; (33) 735; (34) 232; (35) 643; (36) 137, 237; (37) 646.
- variety tests, (40) 44.
- wild, eradication, (27) 643; (31) 739.
- wild, stock poisoning by, (40) 577.

Oniscus asellus, notes, (31) 758.

Onobrychis sativa, culture in Hawaii, (32) 730.

Ononis spp., analyses, (33) 466.

Onophilus n.g., description, (40) 61..

Ontario—

- Agricultural College and Experimental Farm, notes, (32) 392.
- Corn Growers' Association, report, (30) 37.
- department of agriculture, fruit branch, report, (27) 39.
- Good Roads Association, proceedings, (29) 291.
- Oncythrips, new genus, description, (26) 60.
- Ooconus quadricarinatus n.sp., description, (36) 259.
- Oocytase, isolation, (26) 877.
- Oocytase, nonenzymatic character, (28) 876.
- Oocytin, studies, (39) 502.
- Ooencyrtus—
 - chrysopoe n.sp., description, (31) 554.
 - clisocampae, notes, (36) 556.
 - pacificus n.sp., notes, (35) 464.
 - pyrillae, n.sp., description, (36) 556.
 - sp., notes, (29) 658.
 - sp., parasitic on tent caterpillar, (37) 667.
- Oolitic deposits of Department of Yonne, (26) 519.
- Oomyces, spore germination and infection in, (26) 342.
- Oophorectomy, paper on, (29) 500.
- Oophthora semiblidis—
 - artificial breeding, (30) 756.
 - biology, (31) 62.
 - notes, (26) 557.

Oospora—

- casei n.sp., notes, (28) 276.
- citri-aurantii, notes, (37) 843.
- favorum, notes, (28) 562.
- lactis, see Oidium lactis.
- oryzotum n.sp., notes, (37) 148.
- piricola n.sp., description, (37) 250.
- scabies, see Potato scab.
- Ootetrastichus in Hawaii, (40) 854.
- Opatrum—
 - aequale, notes, (31) 757.
 - crenatum, notes, (29) 858.
 - depressum, studies, (40) 854.
 - sp., notes, (29) 853.
- Operative technique, discussion, (26) 373.
- Ophiderma spp. in United States, (38) 764.
- Ophidia, wounds and diseases, (40) 55.
- Ophiobolus—
 - graminis, notes, (27) 747, 748; (28) 646; (30) 148, 748; (32) 642; (34) 845; (37) 248; (38) 48, 648.
 - graminis, treatment, (35) 750.
 - herpotrichus conidial form, (32) 843.
 - notes, (28) 52, 445; (29) 244; (30) 541; (37) 248.
 - studies, (31) 542.
 - oryzinus n.sp., notes, (37) 148.
 - sp., notes, (31) 147.
 - spp., notes, (29) 243; (30) 349, 648.
- Ophiochaeta (Ophiobolus) graminis n.comb., notes, (38) 648.
- Ophionectria—
 - coccicola, notes, (28) 453; (29) 852; (30) 455.
 - coccicola on purple scale, (38) 157.
 - tetraspora n.sp., notes, (30) 455.
- Ophioninae, generic corrections, (34) 362.
- Ophionini, revision, (27) 662.
- Ophthalmia nodosa, notes, (37) 861.
- Ophthalmia, periodic, (39) 283.
- Ophthalmic mallein eye dropper, description, (32) 580.
- Ophthalmic reaction, diagnostic value, (26) 283; (28) 880; (29) 586.
- Ophthalmology—
 - for veterinarians, (31) 376.
 - for veterinarians, treatise, (29) 377.
 - textbook, (27) 284.
- Ophya—
 - leucostoma, "critical" point for, (36) 256.
 - nigra, notes, (38) 466.
- Opiinae, North American, revision, (34) 454.
- Opisthorchis felinus, infection of pigs with, (38) 82.
- Opium—
 - poppy blight, studies, (38) 547.
 - production in Spain, (36) 743.
- Opus—
 - anastrephae n.sp., description, (30) 256.
 - anthomyiae, notes, (28) 752.
 - (Biosteres) sp., parasitic on bud moth, (34) 250.
 - euthyrrhini n.sp., description, (28) 162.
 - fletcheri, introduction into Hawaii, (37) 162.
 - humilis—
 - in Hawaii, (32) 757.
 - notes, (34) 556.
 - parasitic on fruit fly, (37) 856.
 - studies, (38) 659, 767; (40) 459.
- n.spp., descriptions, (29) 359; (34) 454; (38) 165.
- spp., parasitic on fruit flies, (31) 456.
- tryoni n.sp., description, (28) 162.
- tryoni, notes, (26) 150.
- (Uteles) anastrephae n.sp., notes, (29) 652.

Opossum—

dissemination of anthrax by, (28) 678.

new, from Panama, (37) 757.

Opotege and its larval affinities, (40) 757.

Opsine, growth of bacteria in, (39) 888.

Opsonic—

index, determination, (26) 85, 180.

technique, sources of error in, (28) 675.

Opsonins—

and tropins, bacterial, notes, (32) 78.

determination in horse serum, (27) 182.

notes, (26) 676; (27) 882.

of normal serums, (33) 178.

Optical—

atmospheric disturbance of 1912-13, (31) 615.

methods for identification of organic com-

pounds, (39) 415, 506.

Opuntia—see also Cacti and Echinocactus.

arbuscula, root habits, (26) 728.

blakeana and Cissus laciniata, structural rela-

tionship, (28) 332.

Opuntia—Continued.

- coccinellifera, culture experiments, (30) 632.
 - dissecta, density of cell sap, (32) 34.
 - floccosa, description, (37) 434.
 - fruits, personation and multiplication of, (34) 430.
 - monacantha, destruction by Coccus, (39) 559.
 - mulchage of, (40) 819.
 - parasitic on Carnegia, (39) 148.
 - parvula as host of mistletoe, (29) 352.
 - rate and course of growth, (40) 30.
 - root growth in relation to oxygen, (40) 30.
 - sp., carbohydrate content, (39) 224.
 - spp. as ornamentals, (40) 640.
 - spp., behavior under cultural conditions, (30) 336.
 - spp., descriptions, (33) 231.
 - spp., diseases affecting, (26) 551.
 - spp., insects affecting, (27) 357.
 - spp., root systems, (30) 827.
 - spp., wound periderm in, (40) 728.
 - stems, autonomic movements, (32) 429.
 - transpiring power, (35) 733.
 - water absorption and evaporation, (40) 27.
- Orach, insect and arachnid enemies of, (29) 853.
- Orange—
- black rot, notes, (29) 248; (40) 839.
 - black spot and brown spot, treatment, (37) 352.
 - black spot, notes, (34) 644.
 - blossom-end rot, cause, (35) 749.
 - brown spot, notes, (28) 639.
 - chlorosis, notes, (28) 153.
 - die-back, studies, (33) 55.
 - die-back, treatment, (31) 749.
 - diseases, notes, (26) 138; (39) 152, 253.
 - eruptive disease or "exanthema", notes, (27) 850.
 - extract, methods of analysis, (35) 417.
 - fruit scab, notes, (31) 539.
 - groves, Argentine ant in, (39) 156.
 - gummosis, cause, (27) 350.
 - gummosis, notes and treatment, (28) 651; (29) 351.
 - juice, antiscorbutic activity, (40) 272.
 - juice, osmotic pressure, (28) 262.
 - juice, preparation, (33) 316; (37) 313.
 - leaf blotch, notes, (31) 539.
 - leaves as affected by cement dust, (35) 313.
 - maggot, notes, (26) 860; (29) 759.
 - mal di gomma, studies, (33) 550.
 - melanose, investigations, (29) 242.
 - moths, notes, (30) 252.
 - mottle-leaf, cause, (27) 251.
 - mottle-leaf, prevention, (36) 841.
 - oil, manufacture, (36) 207.
 - oil, production, (36) 416.
 - papilio and its natural enemy, (40) 62.
 - peel as an antiscorbutic, (40) 70.
 - peel, pectins of, (29) 608.
 - pest, new, (40) 169.
 - root rot in Tripoli, (40) 851.
 - rot, studies, (29) 248.
 - scab, notes, (30) 47.
- scale—
- fumigation, (39) 463.
 - notes, (28) 158.
 - on olive, (38) 157.
 - studies, (26) 553.
- scaly bark, treatment, (34) 240.
- seed, China, agglutinating properties, (31) 774.
- seeds, oil from, (38) 111.
- skins, analyses, (38) 626.
- stocks, distinguishing, (28) 145.
- thrips—
- notes, (28) 853.
 - on olive, (38) 157.
 - remedies, (27) 555.
 - studies, (38) 763.
- tortricid, cork-colored, notes, (26) 150.
- Tortrix causing decay, (39) 159.
- tree rot, notes, (31) 646.
- vinegar and wine, manufacture, (30) 814.
- vinegar, manufacture, (40) 715.
- wintertip, description, (30) 746.
- wintertip, notes, (34) 241.

Oranges—

Oranges—Continued

- and pomelos, hybrid between, (33) 441.
 - as affected by factory smoke, (27) 831.
 - asexual reproduction of seeds, (31) 533.
 - blood, dry strain, (39) 142.
 - blood, in Caltagirone, (33) 540.
 - bright v. russet fruit of, (34) 535.
 - bud selection, (40) 151.
 - bud variation, (39) 142, 447, 448.
 - cause of rotting in, (33) 150.
 - changes in during ripening, (29) 641.
 - China, seeds of, (32) 613.
 - composition as affected by fertilizers, (37) 649.
 - cost of production in California, (26) 541.
 - crown gall affecting, (28) 447.
 - culture, (27) 438; (29) 745; (36) 538.
- culture—
- experiments, (40) 339.
 - in Alabama, (39) 143.
 - in Montevideo, (30) 533.
 - in southern Texas, (32) 539.
 - treatise, (37) 835.
- decay in transit, (32) 745.
- descriptions (27) 745.
- effect of adjacent leaf area, (39) 541.
- effect on composition of urine, (31) 761.
- enemies of, (28) 352.
- factors affecting maturity, (36) 139.

fertilizer experiments, (27) 320; (32) 233; (36) 642, 841.

Florida, composition, (29) 462.

food plant of purple scale, (26) 756.

formation of so-called navel in, (28) 524.

frost protection, (37) 649.

frosted, detection and elimination, (40) 446.

frosted, separation, (27) 146.

frozen, changes in, (40) 539.

frozen, composition, (34) 365, 502.

fruit resembling, on lemon, (40) 151.

fruiting thorn, (40) 151.

grafting experiments, (32) 233.

growth in relation to soil moisture, (38) 541.

host plant of fruit fly, (26) 758.

hybridization, (31) 48.

improvement by bud selection, (35) 647.

insects affecting, (26) 138; (27) 438, 453; (39) 557.

irrigation, (38) 541.

irrigation experiments, (36) 841.

jelly from, (34) 207.

June drop, (37) 154.

katydids affecting, (33) 451.

manuring, Bahian method, (38) 845; (40) 246.

marketing, (27) 539.

maturity and wholesomeness, (36) 561.

maturity in, (34) 235.

maturity standards, (37) 345, 649.

mulching experiments, (38) 814.

navel—

 - analyses, (36) 743.
 - bud mutations in, (34) 43.
 - bud variations in, (36) 141.
 - culture in Brazil, (36) 241.
 - history and culture, (36) 743.
 - improvement by bud selection and top working, (34) 639.
 - June drop, (37) 834; (38) 757.
 - origin and development, (34) 43.
 - pruning, (36) 141.
 - relation of washing to decay in, (33) 737.
 - seedlessness, (39) 243.
 - splits of, (26) 138.
 - variation in, (27) 841.

nematodes affecting, (34) 354.

new, description, (31) 337.

of Florida, composition, (30) 740.

oil and press cake from seeds, (40) 803.

packing experiments, (29) 637.

Porto Rican, handling, (32) 745.

precooling and handling, (32) 234.

protection against frost, (27) 115, 145.

pruning experiments, (38) 43.

Satsuma—

 - culture, (26) 138; (39) 244.
 - culture experiments, (28) 236.
 - freeze injury, (39) 143.
 - navel variety, (40) 246.
 - varieties, (40) 342.

scale insects affecting, (27) 455.

shipping experiments, (30) 841.

sorting device for, (28) 641.

Oranges—Continued.

- spotting, (35) 50.
- spraying, cost data, (36) 55.
- stocks for, (33) 736.
- sugar and acid content, (29) 641.
- thornless strains, (40) 151.
- total solids and acidity of, (34) 661.
- Valencia, (39) 448.
- Valencia, variation in, (35) 344.
- variability of yield, (38) 744.
- variations in, (27) 441.
- varieties, (38) 40.
- wart-like excrescences on leaves of, (30) 48.
- Washington navel, (39) 447.
- Washington navel, fruit shedding, (40) 839.
- waste, utilization, (30) 316, 814.
- yield as affected by humus content of soils, (38) 814.

Orang-outangs, chromatin bodies in erythrocytes of, (29) 478.

Oraniella coffeicola, notes, (38) 51.

Orasema viridis, development, (27) 262.

Orchard—

- bark beetles, notes, (36) 258.
- bark beetles, studies, (31) 852.
- crop diseases, notes, (28) 450.
- crops, insects affecting, (28) 450.
- diseases—
 - and insect pests, control, (36) 461.
 - in Pennsylvania, (35) 351.
 - in Turkestan, (36) 647.
 - notes, (27) 45; (28) 47, 642, 645, 841; (30) 647.
- ermine moths, notes, (36) 549.
- fruits—
 - culture, (27) 144.
 - fertilizer experiments, (27) 144.
 - insects affecting, (27) 344.
 - notes, (27) 537.
 - spraying, (27) 144.
- grass—
 - as affected by number of cuttings, (29) 431.
 - as forage crop, (31) 829.
 - bacterial disease, description, (30) 539; (31) 745.
 - breeding experiments, (26) 830; (32) 431, 532.
 - composition and digestibility, (36) 469.
 - composition as affected by irrigation, (28) 332.
 - composition at different stages, (39) 836.
 - culture experiments, (29) 631; (30) 228; (32) 431; (33) 33; (36) 32; (40) 136.
 - culture in cotton belt, (32) 534.
 - culture in the Ozarks, (29) 427.
 - culture under irrigation, (33) 228.
 - effect on soil fertility, (27) 136.
 - ergot in Indiana, (39) 52.
 - for irrigated pastures, (40) 432.
 - irrigation experiments, (28) 130, 133; (32) 224.
 - liming experiments, (38) 219.
 - moisture content and shrinkage, (34) 828.
 - notes, (26) 362; (31) 830.
 - on bog and moss soils, (40) 212.
 - pollination experiments, (37) 734.
 - root systems of, (35) 639.
 - seed, adulteration, (35) 740.
 - seed, adulteration and misbranding, (27) 141; (29) 144.
 - seed, examination, (36) 442.
 - seed from various countries, tests, (27) 534.
 - seeding on ranges, (29) 531; (30) 35.
 - time of cutting, (39) 693.
 - variation in, (39) 531.
 - varieties, (29) 139; (30) 434.
 - variety tests, (40) 232.
 - yields, (29) 631; (40) 733.
- heaters, description, (26) 741.
- heaters, tests, (27) 439, 745; (28) 741; (29) 147; (32) 534; (33) 237.
- heating, (26) 741; (27) 241; (32) 744; (38) 641; (39) 45; (40) 342, 540.
- heating devices, tests, (26) 539; (34) 747; (35) 142.
- heating in Ohio, (32) 614.
- industry in California, (29) 639.
- industry in South Australia, (29) 837.
- industry in Utah, (29) 342.
- pests, control, (32) 793.
- pests, remedies, (26) 539; (31) 740.
- pinhole borers, notes, (36) 258.
- plant lice, studies, (40) 649.

Orchard—Continued.

- planting, explosive-fertilizer shell for, (40) 444.
- products, feeding value, (38) 168.
- soils, dynamite for, (33) 239.
- soils, nitrates in, (36) 724.
- survey in New York, Ontario County, (26) 540.
- survey in Utah, (33) 638.
- survey in West Virginia, (33) 140, 839.
- surveys in Ontario, (27) 39; (29) 41.
- surveys, statistical methods, (26) 540.
- Orcharding—
 - dry land, in southern Texas, (32) 338.
 - on rough lands, treatise, (26) 440.
 - textbook, (32) 394.
- Orchards—see also Fruit, Apples, Peaches, etc.
 - clean culture v. cover crop, (37) 40.
 - cost of bringing into bearing, (36) 140.
 - cover crop experiments, (34) 437.
 - cover crops for, (27) 144, 743; (28) 47, 144; (29) 147, 395; (30) 197; (32) 635; (37) 833; (38) 346, 443; (39) 39, 445; (40) 444, 739, 741.
 - cover crops, tests, (31) 635.
 - culture, (27) 843.
 - culture experiments, (36) 724.
 - culture on Yuma reclamation project, (29) 226.
 - culture v. grass mulch, (36) 41.
 - demonstration, rôle in horticultural education, (29) 41, 94.
 - drainage, (36) 888.
 - electrical stimulation, (39) 735.
 - enemies, (27) 756.
 - fertilizer experiments, (26) 238; (27) 538; (33) 236, 239; (35) 235, 446; (36) 40, 237; (37) 240; (40) 341.
 - frost injuries to, (36) 40.
 - grass mulch for, (37) 833.
 - in Missouri, (31) 636.
 - in South Australia, (31) 836; (40) 340.
 - insects affecting, (26) 553; (28) 47, 642, 841; (29) 158, 640; (31) 848; (32) 56, 449; (33) 856; (35) 355.
 - irrigated, intercropping, (39) 46.
 - irrigation, (27) 743; (31) 782; (35) 539; (37) 143; (38) 242.
 - irrigation and culture, (28) 484.
 - irrigation and drainage, (29) 745.
 - laws for protection in Michigan, (33) 438.
 - lime for, (28) 223.
 - management, (26) 741; (27) 598; (28) 437, 640; (29) 339; (35) 142; (36) 95, 341, 841; (39) 38.
 - management in British Columbia, (27) 644.
 - management, lessons in, (27) 897.
 - manuring, (31) 636.
 - mulching v. clean culture, (33) 43, 239.
 - pasture experiments, (27) 538.
 - planting, (26) 597; (30) 443.
 - planting by use of explosives, (29) 183.
 - planting costs, (38) 41.
 - pollination in, (26) 440.
 - protection against frost, (26) 136; (27) 240, 439; (29) 147; (34) 341.
 - pruning experiments, (40) 340, 739.
 - rejuvenation, (27) 538, 897; (28) 47; (29) 745; (33) 97, 240; (34) 341; (36) 40; (38) 242; (40) 341.
 - rejuvenation and operation, (36) 640.
 - rejuvenation, treatise, (27) 241.
 - smudging experiments, (33) 440.
 - soil management, (40) 148, 340, 738.
 - spray calendar, (27) 39.
 - spray gun for, (40) 639.
 - spraying, (28) 156, 352, 653; (30) 344; (32) 637, 834; (33) 47, 98, 735; (36) 535; (38) 796.
 - spraying—
 - and pruning demonstrations, (30) 40.
 - cooperatively, (32) 637.
 - experiments, (27) 440, 538; (29) 145, 354; (31) 151, 335; (33) 45, 46; (35) 342, 447; (37) 242.
 - penetration system, (28) 787.
 - pip system for, (35) 743.
 - program for, (40) 742.
 - v. dusting, (38) 42.
 - straw mulch in, (36) 297.
 - use of explosives in, (39) 445.
 - winter injury, (30) 541.
 - winter work in, (32) 743; (38) 698.
 - young, crops for, (27) 144.
 - young, culture experiments, (33) 238.
 - young, intercropping, (35) 342.

Orchestes—

- canus, notes, (28) 156; (34) 254.
- fagi, notes, (28) 455; (30) 53.
- mangiferae n.sp., description, (35) 365.
- pallicornis, remedies, (31) 456.
- spp., notes, (30) 357.

Orchid—

- bacterial disease, notes, (37) 839.
- bulbs, fungicidal action, (27) 224.
- corms or tubers, dried, analyses, (29) 463.
- diseases, descriptions, (26) 450, 851; (35) 655.
- diseases, notes, (39) 453.
- fly, *see* *Isosoma orchidearum*.
- leaf spot, notes, (34) 442; (40) 844.
- weevil, new, in Milwaukee, (38) 155.
- weevils, notes, (40) 655.

Orchidaceae, endotrophic mycorrhiza, (39) 26.

Orchids—

- bacterial diseases, (26) 650; (40) 158.
- breeding, (39) 449.
- breeding and culture, (33) 143.
- flowers of, (35) 431.
- fumigation, (40) 352.
- hybridization experiments, (30) 329.
- insects affecting, (36) 555; (40) 754.
- pollination by mosquitoes, (30) 658.
- soils supporting, reaction, (40) 812.
- treatise, (27) 41; (34) 741.
- tropical, breeding from seeds, (26) 828.
- tuberization and root infestation, (30) 29.

Orchilus Cabanis, status, (40) 646.

Orchis morio, glycogen content, (27) 133.

Orchitis, tuberculous, in a horse, (31) 182.

Orcin, factors affecting activity, (28) 609.

Oreus chalybeus, parasitic on—

- black scale, (26) 556.
- orange scale, (26) 554.

Oreamnos montanus, host of spotted fever tick, (26) 64.

Oregma lanigera, notes, (26) 857.

Oregon—

- College, notes, (26) 397, 494; (27) 699, 799; (28) 698; (29) 197, 300, 900; (30) 96, 397, 600, 699, 900; (31) 198, 399, 696, 798; (32) 95, 397, 696, 900; (33) 100, 400, 600, 796; (34) 97, 199, 296, 497; (35) 97, 400, 698; (36) 99, 196, 696; (37) 98, 197, 299, 399, 499, 898; (38) 98, 499, 799; (39) 698; (40) 298, 799.

Eastern Substation, report, (32) 899; (34) 294.

Hood River Branch Station, report, (37) 96.

Hood River Substation, report, (35) 299, 595.

Southern Experiment Station, report, (30) 442.

State Livestock Sanitary Board, report, (37) 374.

Station, John Jacob Astor Branch, report, (39) 299.

Station, notes, (26) 300, 397; (27) 699; (29) 98, 197, 300; (30) 397, 600, 900; (31) 198, 300, 399, 696; (32) 95, 397, 696; (33) 100, 400, 796; (34) 199, 497, 695; (35) 97, 400, 698; (37) 98, 299, 399, 499, 898; (38) 98, 499, 799; (39) 698, 900; (40) 298, 799.

Station, report, (32) 899.

Station, Southern Oregon Branch, report, (39) 299.

Umatilla Substation, report, (35) 299.

Oreoscoptes montanus, fruit eating habits, (27) 254.

Organic—

acids, *see* Acids.

compounds—

- antiseptic properties, (39) 412.
- determination, treatise, (34) 312.
- effect on action of fertilizers, (26) 224.
- heat of combustion and solution, (26) 872.
- humification, (34) 516.
- insecticidal value, determination, (37) 848.
- photosynthesis from inorganic, (40) 426.
- toxicity to insect eggs, (38) 858.

constituents of soils, (28) 418, 519.

constituents of soils, effect on plant growth, (28) 417.

evolution, relation to atmospheric variation, (26) 272.

extracts, relation to soil "sickness," (28) 520.

matter—

- ashing, (37) 712.
- cleavage and putrefaction in soils, (31) 313.
- colorimetric determination, (40) 712.
- complete destruction, (26) 206.
- decomposition in soils, (31) 818; (38) 117; (40) 213.

Organic—Continued.

matter—continued.

decomposition, relation to plant nutrition, (40) 739.

destruction in animal and vegetable materials, (37) 713.

determination in soils, (39) 11, 312.

determination in water, (37) 714.

matter, effect on—

nitrification, (26) 721; (31) 722, 819.

nitrifying bacteria, (31) 223.

nitrogen fixation by *Azotobacter*, (33) 823.

nitrogenous compounds, (27) 626; (33) 826.

reaction of iron salts, (28) 410.

reserves of soil nitrogen, (40) 122.

soil acidity, (37) 718.

soil moisture, (40) 811.

soil temperature, (29) 619.

solubility of inorganic soil constituents (37) 422.

matter for maintenance of soil fertility, (39) 725, 815.

matter in dry-farm soils, (31) 318.

matter in soils—*see also* Soils, organic matter.

constituents of, (27) 500.

decomposition, (26) 321, 616.

effect on plant growth, (34) 126.

of South Africa, (26) 420.

relation to microorganisms, (29) 315.

matter—

increasing in soils, (29) 540.

loss from soils, (28) 217.

loss in cultivated soils, (33) 121, 809; (34) 516.

loss in green manuring, (36) 324; (38) 622; (39) 816.

method for rapid destruction, (39) 714.

oxidation in soils, (34) 420.

role in soils, (36) 197.

sampling device for, (37) 711.

showers of, (37) 808.

vegetable, humification, (36) 115.

phosphoric acid compound of wheat bran, (28) 17.

products, utilization by plants, (36) 225.

Organisms—*see also* Bacteria and Microorganisms.

chemical functions, (28) 201.

enviromic reactions of, (30) 223.

fat containing, cultivation, (34) 763.

homozygotic, from heterozygotes, (27) 870.

living, isolation, (36) 275.

living, thermodynamic muscular bioenergy, (28) 168.

reproduction in, (27) 869.

Orygia dubia, biology, (34) 251.

Orygia leucostigma, notes, (27) 861.

Oria muscosa, life history and remedies, (33) 859.

Oribatoidea, synopsis, (37) 858.

Oriental—

peach moth, *see* Peach moth, oriental.

sore, monograph, (39) 633.

sore, transmission, (32) 780.

Orientation in ants, etc., treatise, (33) 563.

Orientation of small objects in paraffin, (38) 497.

Organum—

oil, insecticidal value, (34) 359.

vulgar albiflorum, tea from, (33) 661.

Origin of species—

bibliography, (26) 470; (33) 168.

observations, (26) 728.

Oriole, Bullock—

destructive to codling moth, (27) 559.

destructive to locusts, (23) 351.

Ormyrus, n.sp., description, (36) 557.

Ornamentals—*see also* Plants, Shrubs, Trees, etc.

culture in western Nebraska, (29) 546.

Ornithin, detection in plants, (37) 201.

Ornithodoros—

coriaceus, life history and biting habits, (35) 662.

megrini—

in South Africa, (39) 81.

life history and habits, (37) 856.

notes, (27) 865; (28) 357; (29) 476; (37) 255; (40) 656, 682.

on jack rabbits, (31) 176.

moubata—

nymphs, infection by, (26) 460.

resistance to sheep dips, (23) 481.

transmission of spirochetes by, (30) 578.

transmission of trypanosomes by, (30) 853.

rostratus n.sp., description, (27) 361.

- Ornithodoros—Continued.
 savignyi, relation to recurrent fever, (29) 479.
 talaje in Minnesota, (38) 566.
- Ornithological collector's handbook, (35) 355.
- Ornithology—
 British, bibliography, (36) 251; (39) 555.
 Hungarian, bibliography, (31) 57.
 in South Africa, (26) 552.
- Ornithopus—
 ash constituents of, (30) 334.
 spp., hydrocyanic acid in, (34) 525.
- Ornix geminata—
 notes, (29) 655.
 studies, (35) 359.
- Orobanchae—
 crenata seeds, germination after passage through digestive tract, (31) 634.
 cumana, notes, (29) 851.
 cumana on sunflowers, (31) 153.
 minor, eradication, (31) 532; (37) 239.
 minor on Pelargonium zonale, (32) 822.
 minor, studies, (33) 51.
 on beans, (39) 52.
 parasitic on beans, treatment, (28) 846.
 (Philippaea) ramosa on hemp, (39) 147.
 rubens, notes, (28) 52.
 sp., notes, (40) 48.
 spp. in India, (38) 547; (39) 146.
 spp. on tobacco, (36) 449; (38) 452.
- Orokinase—
 definition, (37) 681.
 in horse saliva, (40) 778.
- Orosiotes n.g. and n.sp., description, (38) 857.
- Oroya fever, studies, (37) 356, 377.
- Orris root, production, (28) 743.
- Orsodacna atra, notes, (32) 754.
- Orsodacninae, catalogue, (30) 458.
- Ortalid, new, from Philippines, (38) 767.
- Ortalidae, trapping, (40) 169.
- Orthesia—
 ambrosiae n.sp., description, (39) 255.
 artemisiae, notes, (26) 149.
 urticae, life history and habits, (28) 452.
- Orthizema atriceps, notes, (31) 757.
- Ortho-arsenite of zinc—
 as an insecticide, (28) 59.
 notes, (26) 856.
- Orthoclase—
 as source of potash, (26) 426; (27) 323; (30) 216; (36) 728.
 decomposition by bacteria, (29) 316.
 decomposition by soil bacteria and yeast, (31) 121.
 fertilizing value, (28) 33; (39) 728.
 potash, solubility, (34) 328.
- Orthoptera—
 in vicinity of La Fayette, Indiana, (36) 252.
 inheritance and evolution in, (31) 58, 272; (40) 367.
 of Connecticut, (26) 147.
 Michigan, key, (39) 863.
 Minnesota, (28) 653.
 Nova Scotia, (40) 856.
 Peru, (40) 353.
 Plummers Island, Maryland, (40) 649.
 southern Italian Somali, (38) 460.
 Virginia, (37) 461.
 Yale-Dominican expedition, (34) 854.
- Orthopteroid insects of Philippines, (36) 355.
- Orthorapha, mouth parts and sucking apparatus of, (29) 760.
- Orthorrhinus kluggi, injurious to roses, (29) 658.
- Orthosia litura, notes, (27) 552.
- Orthotomicus n.spp., descriptions, (35) 856.
- Orthotylus—
 flavosparus, relation to fire blight, (33) 744.
 marginalis, notes, (32) 849.
 marginalis on apple, (40) 60.
 of North America, monograph, (36) 253.
- Ortstein—
 formation, (30) 216, 719; (36) 813.
 formation and composition, (27) 619.
 in North Sea marshes, (30) 514.
 notes, (27) 416.
- Orwood—
 effect on germination of seeds, (28) 536.
 fungicidal value, (28) 541.
- Oryctes—
 monoceros, notes, (37) 54.
 nasicornis, investigations, (38) 163.
 rhinoceros—see also Coconut beetle.
- Oryctes—Continued.
 rhinoceros—continued.
 life history, (26) 654.
 notes, (27) 858; (31) 58; (33) 154.
 remedies, (30) 357.
 studies, (28) 561; (30) 459; (39) 663.
 spp., notes, (29) 858.
 tarandus, control by parasites, (39) 869.
- Oryssoidae, studies, (30) 59.
- Oryssus—
 immature stages, notes, (40) 265.
 parasitic on Buprestis, (40) 656.
- Oryza—
 barthii, studies, (26) 438.
 manilensis, description, (36) 531.
 n.spp., descriptions, (33) 429.
 sativa, analyses and digestibility, (28) 464.
 sativa, germination, (30) 437.
- Oryzanin, a constituent of rice bran, (28) 168.
- Oryzomyz—
 n.spp., descriptions, (34) 850.
 revision, (39) 860.
- Osage orange—
 as dyestuff, (32) 613.
 for dairy cows, (36) 374; (38) 680.
 rubber, notes, (29) 546.
 waste as dyestuff, (35) 114.
- Osazone method of detecting plant tissue sugars, (39) 27.
- Oscillaria prolifica, composition, (36) 201.
- Oscinella frit, control in Kief, (38) 257.
- Oscinis—
 frit, see Frit fly.
 n.spp., descriptions, (40) 263.
 spp., notes, (27) 560.
- Oslers—
 culture, (31) 49, 839.
 culture, manual, (30) 347.
 insects affecting, (28) 654; (29) 853.
- Osmia—
 felti, notes, (33) 253.
 nesting habits, (40) 655.
 spp., bionomics, (35) 468.
- Osmosis—
 in soil solution, rôle in wheat culture, (37) 128.
 in soils, (26) 217; (29) 124; (30) 23; (31) 720.
 relation to metabolism, (28) 667.
 review of literature, (35) 432.
- Osmotic—
 cell, artificial, new type, (38) 125.
 effects in plants, origin, (26) 531.
 equilibration in the living body, (28) 262.
 membranes, significance in heredity, (28) 667.
 pressure—see also Sap concentration.
 as an environmental factor in plants, (29) 627.
 determination, (29) 731.
 importance in relation to biologic sciences, (30) 801.
 in alpine plants, (39) 223.
 animals and plants, (38) 821.
 desert plants, (33) 628.
 leaves, induced variations in, (29) 134.
 leaves, studies, (27) 631.
 mangroves, (30) 30.
 marine algae, (39) 223.
 plant organs, (30) 523.
 plants, (29) 133, 134, 828; (35) 25, 26, 822.
 potatoes, (30) 228.
 roots and leaves, relation to water supply, (37) 525.
 monograph, (30) 310.
 of casein, measurement, (26) 307.
 epiphytes and parasites, (32) 221.
 Jamaican mountain plants, (38) 125.
 sap and height of leaf insertion, (38) 126.
 sap, determination, (38) 523.
 relation to root hairs, (28) 814.
 relation to stomata regulation, (33) 628.
 table, (37) 630.
 treatise, (40) 801.
- Ossein, nutritive value and use, (32) 760.
- Osteochondrosarcoma in chickens, (28) 288.
- Osteomalacia—see also Lamzlekte.
 notes, (32) 374.
 summary and digest of data, (36) 161.
- Osteomyelitis in cattle and horses, (27) 478.
- Osteoporosis in horses, (36) 780.
- Ostertagia—
 bullosa, notes, (29) 555.
 circumcincta, notes, (40) 83.

- Ostertagia**—Continued.
 spp., notes, (28) 481.
 trifurcata in abomasum of sheep, (35) 78.
- Ostitis**, infectious, in cattle and horses, (27) 478.
- Ostrich**—
 chick fever, (33) 384.
 chicks, diseases and parasites of, (26) 487.
 farming in Australia, (29) 575.
 feather industry in South Africa, (33) 774.
 feathers, analyses, (26) 469.
 wireworm, life history, (33) 384.
- Ostriches**—
 breeding and care, (34) 873.
 breeding and feeding, (27) 876.
 breeding for plumes, (26) 473.
 breeding in Germany, (32) 173.
 breeding, treatise, (26) 772.
 feather development in, (30) 874.
 feather irregularities, (28) 270, 271.
 feathers of, (27) 472.
 from Sudan, (27) 674.
 laying records and weight of eggs, (39) 781.
 leucocytotoxon affecting, (28) 683; (29) 476.
 notes, (29) 172.
 quilling experiments, (27) 472.
 raising in Morocco, (38) 174.
 studies, (35) 569.
 treatise, (30) 472, 874.
- Osyris**—
 abyssinica, analyses and digestibility, (32) 167.
 alba, description, (27) 547.
- Otacariasis** in mountain sheep, description, (33) 680.
- Otiocerus coquebertii**, notes, (26) 147.
- Otiorynchus**—
 (Crypiphorus) ligustici, studies, (33) 657.
- ovatus**—
 life history and remedies, (30) 58.
 notes, (28) 156; (32) 448, 556; (37) 54.
 remedies, (38) 864.
 studies, (36) 156.
- rotundatus**, habits of, (29) 657.
- sensitivus** (planatus), life history and bionomics, (26) 861.
- spp.**, colored plate, (40) 170.
- spp.**, notes, (28) 456.
- spp.**, parthenogenesis in, (32) 250.
- sulcatus**, notes, (30) 654; (32) 156, 556; (34) 65; (36) 859.
- sulcatus**, studies, (39) 363.
- tauricus**, notes, (33) 652.
- Otobius** (Ornithodoros) megnini, notes, (28) 357.
- Otocoris alpestris actia**, destruction of locusts by, (28) 351.
- Othlia**—
 amica, notes, (33) 545.
 sp. on sugar cane, (37) 553.
- Otus asio**, notes, (27) 355.
- Ougeimia dalbergioides**, notes, (29) 443.
- Outdoor work**, treatise, (26) 298.
- Ova**—
 intrauterine absorption, (40) 663.
 mammalian, segmentation, (27) 770.
 parasitic, viability, (26) 588.
 production of sperm isoagglutinins by, (29) 167.
 white and yellow yolk of, studies, (26) 164.
- Ovalbumin**, preparation and refractive index, (39) 609.
- Ovarian**—
 extract feeding, effect on growth and sexual development, (34) 766.
 infection in fowls, studies, (31) 484.
 transplantation experiments, (28) 173.
 transplantation in chicks, (34) 870.
 transplantation in ducks, (40) 367.
 transplantation in guinea pigs, (30) 472.
 transplantation, notes, (26) 163.
- Ovaries**—
 as affected by Roentgen rays, (32) 466.
 development in fowls, (29) 874.
 isolated, effect on growth, (40) 662.
 of pigs, enzymes of, (27) 670.
- Ovariectomy**, on sheep, (27) 70.
- Ovariectomy** in fowls, (40) 871.
- Ovaritis** in cattle, (38) 179, 787.
- Ovary**—
 extract, effect on milk production, (37) 173.
 of the fowl, corpus luteum, (40) 664.
 resting, in hen, effect of pituitary extract on, (33) 472.
- Oven**—
 electrical, description, (29) 567.
 temperatures for cooking, standardization, (31) 359.
- Overfeeding**, effect on energy metabolism, (28) 264.
- Oviducal glands**, albumin secreted by, (37) 773.
- Oviduct**—
 effects of ligation, section, or removal, (32) 670; (33) 96.
 of domestic fowls, secretory activity, (26) 196.
 of hen, abnormality, (33) 471.
 of hen, histology, (28) 575.
 physiology, (26) 670.
- Ovis** tragelaphus, relation to sheep pox, (28) 183.
- Ovochromin**, notes, (28) 607.
- Ovomucoid** of birds' eggs, investigations, (28) 65.
- Ovosertums**, use, (30) 112.
- Ovularia palmicola** n.sp., description, (31) 746.
- Ovulation**—
 and ovarian cyst formation, (40) 467.
 as affected by corpus luteum, (33) 96.
 in fowls as affected by corpus luteum, (32) 671.
 in swine, (40) 663.
 period in rats and mice, (40) 663.
- Ovules**, abortiveness in relation to pod position, (34) 134.
- Owl**, burrowing, destruction of locusts by, (28) 351.
- Owl**, little, economic importance, (29) 651.
- Owls**, notes, (27) 355.
- Owls** of France, treatise, (26) 452.
- Ox**—
 hemoglobin, hydrolysis, (26) 22; (28) 607.
 muscle, autolysis in, (36) 109.
 muscle, lysin content, (31) 559.
 saliva, diastase in, (36) 82; (37) 276.
 serum, coagulation by ultraviolet light, (30) 110.
 serum proteins, refractive indexes, (28) 501.
 small diluvial primitive, (26) 768.
 warble fly—see also *Hypoderma* spp. and *Bots.*
 control, (32) 153, 680.
 control in Denmark, (26) 485.
 control in Germany, (32) 581.
 genitalia and larva of, (31) 254.
 in Netherlands, (38) 563.
 in South Africa, (31) 780.
 in United States, (35) 76.
 larvae extract, effect on cattle, (36) 478.
 larvae extract, effect on cattle and sheep, (37) 379.
 larvae, migration, (39) 157.
 larvae, penetration from alimentary tract, (26) 657.
 life history, (27) 457; (32) 60, 153, 680; (33) 656; (37) 691.
 mature larva in back of horse, (33) 554.
 notes, (26) 286, 781; (27) 356; (28) 81, 181; (29) 357, 761; (30) 83, 254, 552; (31) 98; (32) 448, 753, 796; (33) 554, 878; (36) 456; (37) 156, 464; (40) 259.
 relation to weather conditions, (26) 657.
 review of literature, (29) 856.
 studies, (27) 289; (31) 85; (35) 282; (36) 482.
 warble juice, effect of injection, (39) 585.
- Oxalates**, toxic action, (40) 465.
- Oxalic acid**—
 assimilation by plants, (31) 426.
 detection in wine, (37) 207.
 determination in pine needles, (28) 713.
 determination in sesame cake, (28) 713.
 effect on—
 bacterial flora of soils, (28) 815.
 bread fermentation, (27) 268.
 carbon assimilation by plants, (27) 525.
 isolation from soils, (28) 418.
 larvicidal value, (34) 359.
 production from wood, (28) 50.
 salts, toxicity, (27) 229.
 secretion by *Cicer arietinum*, (34) 525.
 solutions, keeping qualities, (38) 412.
- Oxalic compounds**, effect on vegetation, (29) 49.
- Oxalis**—
 esculenta as affected by copper fungicides, (28) 247.
 genetical studies, (34) 823.
 spp. on corn in Barbados, (33) 445.
 violacea, notes, (31) 235.
- Oxamid**—
 assimilation by plants, (26) 32.
 availability of nitrogen in, (35) 427.

Oxen—

- abnormal digits, (27) 369.
- cost of raising, (28) 467.
- degeneration in teeth of, (33) 270.
- digestion experiments, (28) 463.
- European wild, old pictures of, (28) 365.
- feeding experiments, (26) 468; (32) 166, 363, 770.
- from Roman military station, skulls of, (26) 165.
- limb tendons of, (29) 570.
- maintenance ration, (33) 870.
- pasturing experiments, (31) 470.
- reproductive organs, (27) 369.
- serum proteins of, (28) 875.
- sinus hairs, (27) 373.
- skin temperature and fattening capacity, relation, (31) 866.
- v. horses for field work in Russia, (26) 269.
- working, dipping, (33) 384.

Oxyhydratase, antitoxic rôle, (40) 580.

Oxidase—

- action, mechanism, (35) 713; (36) 609; (37) 726.
- activity in etherized bulbs and tubers, (30) 728.
- activity in plants, (37) 9, 326, 429, 430.
- apparatus, description, (32) 508.
- content of plant juices, measurement, (27) 9.
- content of sugar beets, (28) 314.
- effect on anthocyanin, (38) 128.
- enzymes, notes, (34) 711.
- of fruits, notes, (26) 310.
- of *Rhus diversiloba*, (37) 411.
- reaction for detection of rancid fats, (40) 412.
- reactions, studies, (36) 503.
- reagents, color changes in, (36) 224.
- relation to catalase in plant tissue, (36) 610.

Oxidases—

- detection, (26) 204.
- distribution and rôle in plants, (27) 632.
- distribution in plants, (31) 626; (34) 32; (35) 130.
- in chicken fat, (23) 63.
- corn silks, (30) 709.
- potatoes, (31) 748.
- tobacco plant, (31) 204.
- of acid tissues, (31) 826.
- Cytisus adami*, (27) 733.
- resting and sprouted potatoes, (26) 547.
- sugar cane, (40) 426.
- plant, nature and function, (30) 203.
- plant, review of literature, (33) 426.
- rôle in—
 - deterioration of cut flowers, (28) 129.
 - formation of essential oils, (28) 129.
 - formation of pigments, (29) 219.
 - plant respiration, (34) 523, 524; (36) 329.
 - sugar beet curly top, (29) 48, 550.
- studies, (27) 503; (33) 409; (36) 224.

Oxidation—

- as affected by food ingestion, (40) 364, 365, 766.
- by catalysts, (33) 329.
- effect on soil phosphorus, (27) 122.
- in animal body, (28) 607; (34) 663.
- potential, measurement, (36) 224.

Oxidizers, effect on ammonia production and use in killed plants, (28) 327.

Oxido-reduction, biochemical phenomena, (38) 802.

Oxids, metallic, fertilizing value, (31) 821.

Oxidus—

- gracilis*, studies, (37) 667.
- new genus, description, (26) 353.

Oxybenzoic acid, aerobic fermentation, (30) 28.

Oxycareus—

- hyalinipennis*, notes, (32) 847; (40) 256, 854.
- laetus*, notes, (28) 654.

Oxycheilaster, color reaction for, (36) 112.

Oxyechus vociferus—

- destruction of locusts by, (28) 351.
- notes, (27) 355.

Oxygen—

- absorption by oils, (29) 613.
- absorption by respiratory chromogens of plants, (29) 324.
- absorption by sewage effluents, (26) 406.
- analysis, apparatus for, (40) 111.
- and carbon dioxide, effect on nitrogen transformation in soils, (36) 724.
- atmospheric, effect on plant proteins, (27) 426.
- concentration, relation to methylene blue reduction by milk, (40) 613.
- density, (34) 414.
- determination, (31) 109.

Oxygen—Continued.

determination in—

- sewage, (26) 407.
- water, (31) 411; (35) 415.
- water and effluents, (34) 410.
- water in presence of nitrite, (33) 413.
- disappearance in canned food containers, (28) 361.
- dissolved, determination in water, (32) 612; (33) 711.
- dissolved, in rainwater, (37) 620.
- dissolved, in water, factors affecting, (26) 418.
- effect on—
 - alcoholic fermentation in peas, (26) 731.
 - denitrification, (27) 424.
 - germination of aged seeds, (36) 29.
 - elimination as affected by light, (28) 801.
 - pressure effect on seed germination, (26) 131, 531.
 - relation to ammonia formation in plants, (28) 328.
 - relation to growth of algae, (28) 821.
 - requirements of roots of higher plants, (38) 628.
 - rôle in germination of Gramineae, (38) 24.
 - rôle in germination of seed, (30) 629.
 - storage by bacteria and fungi, (28) 329.
- Oxygenase, activity in diseased potatoes, (26) 548.
- p-Oxyphenylethylamin in normal cheese, (32) 503.
- Oxypleurites n.spp., descriptions, (30) 362.
- Oxyproteic acids, chemistry of, (33) 409.
- Oxyptilus periscelidactylus, *see* Grape plume moth.
- Oxyrhachys tarundus, notes, (31) 59.
- Oxyspirura mansonii, treatment, (29) 784.
- Oxysternus maximus, notes, (29) 858.
- Oxythrips, synopsis, (36) 550.
- Oxythrya cinctella, notes, (27) 453.

Oxytropis—

- lamberti*, occurrence of barium in, (26) 432.
- spp., descriptions, (39) 386.

Oxyurias, variation in, (33) 459.

Oxyuriasis, equine, treatment, (40) 585.

Oxyuris vermicularis—

- dissemination by flies, (30) 659.
- physiological investigations, (31) 679.
- relation to appendicitis, (26) 678.

Oxyurosis in the horse, (39) 686.

Oyster—

- beds, inspection in New Jersey, (28) 832.
- culture, studies, (39) 782.
- floating laboratory, description, (27) 774.
- grounds, inspection in United States, (26) 761.
- industry, sanitary regulations, (27) 269.
- larvae, collecting, (26) 473.
- laws in Washington, (27) 254.
- mud, analyses, (32) 424.
- propagation, (40) 177.
- shell scale—
 - as affected by low temperature, (34) 357.
 - control, (39) 162.
 - life history and remedies, (29) 558.
 - mite enemies, (27) 861.
 - notes, (27) 658; (28) 156, 353, 752; (29) 251; (31) 60; (34) 158; (35) 253, 256, 756.
 - notes and remedies, (29) 758.
 - parasites of, (26) 149.
 - remedies, (33) 59; (36) 857.
 - studies, (33) 558.
- shells—
 - analyses, (36) 821.
 - analyses and use, (28) 726.
 - availability in relation to fineness, (35) 631.
 - fertilizing value, (39) 626.
 - ground, analyses, (28) 626; (31) 424; (33) 820.
 - ground, diffusion in soils, (29) 128.
 - ground, mixing with acid phosphate, (36) 325.

Oysters—

- analyses, (28) 459.
- bacterial content, seasonal variation, (26) 761.
- bacterial purification, (27) 63.
- bacteriological analyses, (38) 265.
- bacteriological examination, (37) 468.
- Canadian, development, (26) 473.
- canned, industry in United States, (31) 67.
- creatin and creatinin content, (31) 760.
- culture, (27) 472, 774.
- culture in Germany, (30) 271.
- destruction by crabs, (36) 853.
- examination, (26) 868; (28) 166; (31) 64; (32) 854; (35) 287, 859; (36) 159.
- floating, (27) 762; (30) 375.

- Oysters—Continued.
 floating or swelling, (36) 861.
 green color of, (35) 265.
 green, copper content, (36) 861.
 handling and marketing, (31) 63.
 packing, shipping, and sale, (34) 761.
 polluted, purification, (35) 763.
 propagation, (28) 774; (30) 374; (32) 573; (34) 180;
 (36) 871.
 recipes, (29) 361.
 relation to typhoid fever, (31) 460; (35) 162.
 removal from polluted to unpolluted waters,
 (26) 67.
 sewage-polluted, danger from, (27) 866.
 shell, determination of sanitary quality, (30)
 163.
 shocked, cold-storage changes, (37) 311.
 sold in Baltimore, bacterial content, (31) 759.
 solidity of, (36) 861.
 studies, (40) 459.
 transmission of diseases by, (30) 368.
 water content, (32) 252.
Ozamia lucidalis, notes, (28) 451.
- Ozone—
 absorption bands in spectra of sun and stars,
 (38) 511.
 determination in atmosphere, (39) 210.
 effect on beech wood, (30) 711.
 formation in upper atmosphere, (33) 19.
 nascent, as food preservative, (29) 566.
 purification of water by, (32) 87.
 therapeutic value, (38) 585.
 use in sterilization of milk, (27) 75.
 water purifiers, description, (30) 789.
- Ozonium omnivorum*, notes, (30) 538; (31) 746; (38)
 334.
- Pachnaeus litus*, notes, (28) 855.
Pachnaeus opalus, notes, (31) 751.
Pachybrachys, North American, revision, (34) 361.
Pachybrachus verticalis n.sp., description, (32) 658.
Pachycoris torridus, notes, (30) 657.
Pachycrepoides dubius, notes, (40) 459.
Pachylia ficus, notes, (30) 454.
- Pachymerus*—
chinensis, remedies, (31) 553.
chinensis, studies, (28) 256.
gonagra in Hawaiian Islands, (40) 266.
quadrinaculatus, notes, (40) 170.
- Pachynematus montanus*, notes, (30) 249.
- Pachyneuron*—
allograptae, notes, (31) 758.
hammari n.sp., description, (32) 557.
mucronatum n.sp., description, (36) 565.
 North American species, (38) 565.
virginicum, notes, (38) 565.
- Pachyappa reaumuri*, notes, (34) 551.
- Pachyrrhizus erosus*, effect on nitrogen content of
 soils, (31) 733.
- Pachyrrhynchidae* of Philippines (28) 561.
- Pachytychius mungonis* n.sp., description, (35) 365.
- Pachytylus*—
migratorius—
 destruction by *Coccobacillus acridiorum*
 (33) 154.
 notes, (31) 850.
migratoroides—
 notes, (28) 555.
 propagation and distribution, (30) 546.
 sp., control in Malay, (34) 254.
- Pachyzancla*—
bipunctalis, studies, (26) 250.
periusalis, studies, (39) 58.
- Packing—
 boxes, tests, (28) 843.
 factories, inspection in Ohio, (33) 165.
 house waste, fertilizing value, (39) 429.
 plants, inspection in Virginia, (29) 567.
- Paddy, *see* Rice.
- Paederus* sp., notes, (27) 862.
- Pagoda tree diseases, notes, (27) 854.
- Paille finne grass, analyses and use, (32) 68.
- Paint—
 analyses, (33) 17.
 and oil law in South Dakota, (29) 567.
 films as coatings for concrete, (31) 784.
 inspection in South Dakota, (33) 67.
 law in North Dakota, (28) 661; (33) 91, 662.
 law in Ohio, (33) 261.
 mineral, deposits in Virginia coastal plain, (29)
 513.
- Paint—Continued.
 testing, (33) 90.
 use on the farm, (26) 386.
- Paints—
 analyses, (28) 715; (29) 866.
 branding, tests, (34) 668.
 dry, insecticidal value, (29) 758.
 examination, (28) 565.
 for highway bridges, tests, (36) 587.
 for roofs, (35) 189.
 for steel bridges, (36) 384.
 inspection in Iowa, (36) 762.
 inspection in Wisconsin, (35) 471.
 sheep branding, tests, (27) 874.
 tests and analyses, (30) 691.
 use of soy bean oil in, (28) 114.
- Palaeochenoides mioceneus*, relationships, (38) 556.
- Palaeococcus fuscipennis*, notes, (30) 249.
- Palaeopus* n.sp., descriptions, (39) 565.
- Palate of civilized man, relation to agriculture, (40)
 656.
- Palaecrita vernata*, *see* Cankerworm, spring.
- Paleobotany, bibliography, (29) 626.
- Palindia, notes, (34) 855.
- Palm—
 bud rot, notes, (30) 845; (38) 547.
 butter, testing and manufacture, (40) 115.
 cabbages of Madagascar, (27) 766.
 cake, analyses, (26) 266; (27) 570; (29) 367.
 disease in Belgian Kongo, (35) 550.
 diseases in India, (33) 846.
 diseases, notes, (27) 747; (28) 241; (39) 52, 147, 752;
 (40) 48, 845.
 fruits and seed from Brazil in Missouri Botanical
 Garden, (31) 742.
- kernel—
 cake, analyses, (31) 467, 864; (34) 263.
 cake, digestibility, (36) 764.
 cake for cattle, (34) 566; (38) 167.
 meal, analyses, (31) 864; (38) 771.
 meal, feeding value, (38) 167, 771; (39) 576,
 577; (40) 573.
 meal for steers, (37) 769.
 oil and coconut oil, differentiation, (38) 413.
 oil, detection, (28) 208; (29) 613.
 oil, physical constants, (35) 312.
- kernels, composition and nutritive value, (34)
 565.
- Kolerog disease of, (31) 841.
- Nipa, paper-making material from, (31) 526.
- nut cake—
 acidity, (35) 770.
 agglutinating properties, (31) 774.
 analyses, (26) 267, 363; (27) 872; (29) 467; (30)
 268, 467; (31) 766; (32) 672; (33) 170, 665, 870;
 (37) 873.
 as feeding stuff, (34) 298.
 composition and digestibility, (33) 568.
 composition and feeding value, (32) 774.
 digestibility, (31) 767.
 effect on milk, (34) 471, 570.
 effect on milk production, (26) 169; (27) 280;
 (33) 674.
 feeding value, (38) 572.
 for cows, (37) 872.
 for sheep and cattle, (31) 766.
 in ration, effect on bulk of manure, (40) 126.
 rancidity (35) 770; (39) 269.
 sugar content, (37) 208.
- nut meal, analyses, (30) 268.
- nut oil, refractive index, (27) 615.
- oil, detection, (27) 207; (29) 613; (37) 13.
- oil, production in United States, (40) 614.
- oil products as feeding stuffs, (38) 368.
- oils, composition, (26) 23; (36) 803.
- saps, studies, (30) 16.
- scale, tessellated, notes, (28) 854.
- seed cake, analyses, (30) 67.
- seed, royal, analyses, (26) 873.
- weevil—
 Asiatic, notes, (33) 154.
 destructive to sugar cane, (28) 561.
 notes, (26) 354.
 red, life history (26) 654.
 studies, (39) 468.
- Palmer worm, notes, (30) 657.
- Palmer worm, oviposition of, (31) 352.
- Palmetto—
 ornamental, in southern Texas, (28) 841.
 saw, notes, (30) 145.

- Palmetto**—Continued.
 saw, studies, (35) 807.
 scale in California, (34) 563.
- Palmilla** as emergency forage, (39) 772.
- Palmitic acid**—
 and palmitates, metabolism, (39) 874.
 determination, (31) 508.
 salts, solubility, (35) 416.
- Palmitin** content of egg yolk, (26) 67.
- Palmitoyldistearin** in lard, (32) 801.
- Palm** Mids, feeding value, (40) 668.
- Palms**—
 culture and utilization, (33) 438.
 culture experiments, (40) 339.
 culture, open air, in Italy, (32) 746.
 date, *see* Date palms.
 diameter growth of, (28) 341.
 indigenous to Cuba, (27) 242.
 of British India and Ceylon, (30) 444; (33) 841.
 of India and Ceylon, (38) 44.
 of Philippines (33) 433.
 oil, *see* Oil palm.
 royal, root nodules, (27) 847.
 sugar, culture and use, (32) 46.
 sugar, notes, (40) 44.
 sugar-producing, notes, (29) 149.
 treatise, (28) 542.
 weeping fan, culture in Arizona, (32) 233.
- Palmrya**—
 diseases, notes, (40) 48, 845.
 leaf spot, notes, (27) 751.
 palm diseases, treatment, (38) 351.
- Paleocephala dioscoreae** n.s.p., description, (38) 864.
- Palostoma torrentium**, notes, (29) 54.
- Palur** agricultural station, report, (33) 130.
- Pamburus**, new genus, description, (35) 449.
- Pampas** grass, toxicity to sheep, (39) 85.
- Pamphila dysmephila**, life history and habits, (29) 655.
- Pamphilus**—
 dentatus, life history and habits, (28) 553.
 persicum, notes, (26) 856.
- Pan American**—
 Road Congress, (34) 390, 484; (35) 583.
 Scientific Congress, (32) 498; (33) 599; (34) 303.
- Panargyrops pellucidator**, notes, (38) 768.
- Panax arboreum**, intumescences in, (26) 545.
- Panchlora hyalina**, notes, (28) 351.
- Pancreas**—
 diastase, effect on oat and wheat starch, (28) 660.
 diseases, diagnosis, (29) 268.
 ferments of, (29) 662; (32) 858, 859; (34) 257.
 function of, (36) 562.
 internal secretions of, (30) 201.
 of pigs, structure and growth, (32) 378.
 pathology, (27) 576.
 preparations, factors affecting activity and stability, (31) 203.
 preparations, proteolytic activity, (32) 710; (39) 669.
 rôle in digestion and absorption of fat, (34) 257.
- Pancreatic**—
 amylase, studies, (40) 504.
 and gastric fat digestion in infants, (29) 365.
 ferments, coagulation, (38) 710.
 juice, nature and properties, (34) 257.
 juice of dogs, alkalinity, (29) 268.
 secretion, relation to fats, (29) 465.
 vitamin, use in malnutrition, (37) 65.
- Pancreatin**, studies, (26) 265.
- Pandemis ribeana**, notes, (34) 855.
- Pandorina** as affected by copper sulphate, (39) 27.
- Panga** fruits as tanning material, (36) 509.
- Panicularia**—
 occidentalis n.s.p., description, (34) 336.
 spp., cyanogen in, (33) 665.
- Panicum**—
 altissimum, distribution of stomata in, (32) 221.
 barbinode, culture in Guam, (40) 327.
 bulbosum, analyses, (27) 469.
 capillare as host of curlew bug, (27) 162.
 combsii in Florida, (40) 137.
 crus-galli, two species of (39) 231.
 hemitomonum, analyses and use, (30) 437; (32) 68; (35) 831.
 maximum, composition and culture, (31) 832.
 miliaceum, botanical studies, (37) 336.
 miliaceum, coloration of glumes, (32) 727.
 miliaceum of Java, (35) 440.
- Panicum**—Continued.
 numidianum, cercopid enemy, (40) 856.
 numidianum, notes, (30) 229.
 palmifolium as forage crop, (38) 827.
 repens, notes, (30) 230.
 sanguinale, root system, (36) 438.
 spp., analyses, (27) 68; (28) 463; (30) 565; (31) 863.
 spp., analyses and cultural notes, (38) 528.
 spp., analyses and digestibility, (28) 464; (32) 167.
 spp., culture experiments, (28) 136.
 spp., culture under irrigation, (33) 228.
 spp., notes, (26) 362.
 spp. of tropical North America, (33) 727.
 spp., studies, (32) 727.
 trichopus, analyses and digestibility, (27) 871.
- Panicus geminatus**, notes, (31) 355.
- Panolls**—
 griseovariata, notes, (31) 756.
 piniperda, notes, (35) 254.
 piniperda, prevalence in Bohemia, (33) 748.
- Panorpa klugi**, life history, (28) 655.
- Panscopus** spp., notes, (35) 364.
- Pansies**—
 breeding experiments, (27) 741.
 cut, preservation, (31) 837.
 varieties, (31) 48.
- Pantala flavescens**, food habits, (34) 549.
- Pantomorus fulleri**, notes, (32) 556.
- Panzeria minor** n.s.p., studies, (39) 659.
- Panzeria rudis**, biology, (35) 253.
- Papain**—
 digestive value, (28) 110.
 effect on activity of zymase, (28) 504.
 extraction experiments, (33) 141.
 proteolytic activity, (38) 802.
- Papaipema nitela**, *see* Stalk borer.
- Papaipema** sp., notes, (26) 59.
- Papatasii** flies of Malta, (35) 57.
- Papaver**—
 inhibiting factors in breeding, (26) 827.
 orientale, alkaloids in (32) 327.
 rheas, color inhibitions, (27) 733.
 rheas, self-sterility, (38) 426.
 somniferum, alkaloids, latex, and oxidases in, (36) 127.
- Papaveraceae**, oils and alkaloids of, (36) 628.
- Papaws**—
 analyses and food value, (38) 365.
 improvement, (38) 542.
 recipes, (28) 863.
 specimens in United States, (36) 445.
- Papaya**—
 dioecious character, (28) 238.
 disease in Barbados, (34) 249.
 disease, studies, (30) 838.
 diseases, treatment, (37) 550.
 flowers, variation in (35) 449; (36) 241.
 fruit disease, notes, (37) 148.
 fruit fly, danger of introduction, (39) 467.
 fruit fly, investigations, (32) 60.
 leaf disease, studies, (29) 848; (31) 55.
- Papayas**—
 analyses, (32) 761.
 analyses and use, (30) 363.
 botany and culture, (33) 440.
 breeding, (35) 344.
 breeding experiments, (29) 234; (30) 841; (32) 741; (35) 539; (37) 142; (38) 842.
 change of sex in, (30) 838, 842.
 cold storage of, (32) 439.
 culture, (31) 536; (37) 345.
 culture—
 and shipping experiments, (27) 142.
 and use, (36) 241.
 experiments, (30) 841; (40) 339.
 in Philippines, (34) 635.
 for pigs, (30) 868.
 grafted, possibilities, (29) 42.
 host plant of fruit fly, (26) 758.
 insects affecting, (30) 842.
 propagation, (27) 142.
- Paper**—
 absorbency, determination, (38) 414.
 and pulp industry, bibliography, (29) 119.
 as affected by humidity, (37) 109.
 bottles, tests, (27) 777.
 detection of faulty sizing in, (28) 513; (35) 718.
 discoloration due to fungi, (37) 630.
 dishes, bacteriology, (32) 856.

Paper—Continued.

- from corn stalks, (27) 314.
 - jack pine and hemlock, (27) 541.
 - longleaf pine chips, (38) 809.
 - tomato skins, (28) 660.
 - waste resinous woods, (28) 512.
 - industry in United States, (37) 748.
 - investigations at Forest Products Laboratory, 1918, (40) 641.
 - manufacture from bagasse, (26) 213.
 - measurement of translucency, (27) 114.
 - methods of analysis, (27) 205.
 - mill waste liquors, purification, (33) 520.
 - milling, Ives tint photometer in, (36) 207.
 - parchment, for dairy use, (27) 575.
 - pulleys, tests, (28) 590.
 - pulp—*see also* Pulpwood and Wood pulp.
 - filter, use in quantitative analysis, (34) 712.
 - from dead leaves, (39) 808.
 - from esparto, (31) 832.
 - from long-leaf pine, (30) 615; (31) 144.
 - manufacture from bamboo, (27) 647; (28) 645.
 - materials, (40) 243, 745, 823.
 - microscopy, (27) 315.
 - textile from, (38) 208.
 - technology, manual, (26) 316.
 - testing, constant temperature and humidity room for, (38) 414.
 - waste as source of lime, (38) 22.
 - wet, determination of strength, (36) 509.
- Papilio**—
- androgæus, notes, (39) 59.
 - demoleus, notes, (34) 851.
 - spp., notes, (26) 656, 857.
 - thoas thoantides, notes, (40) 62.
- Papilionaceæ**, oil content of seeds, (27) 716.
- Papilionidae** of Japan, (26) 455.
- Pappataci** fever in South America, (26) 656.
- Pappophorum**—
- scabrum, analyses, (36) 334.
 - scabrum, studies, (38) 66.
 - spp. analyses and digestibility, (27) 871; (32) 167.
- Paprika**—
- adulteration, detection, (27) 497, 809; (30) 413.
 - American-grown, (30) 343.
 - ether extract of (26) 99.
 - extracted, detection, (32) 612.
 - methods of analysis, (27) 715.
 - origin and composition, (29) 264.
- Para cymene**, nitration, (40) 710.
- Para grass**—
- composition, (27) 668.
 - culture experiments, (28) 136, 735; (35) 829.
 - culture in Guam, (32) 731; (40) 327.
 - culture in Philippines, (26) 361.
 - digestibility, (27) 669; (37) 168.
 - feeding value, (40) 366.
 - hay, analyses, (32) 862.
 - hay, chloroform extract of, (31) 71.
 - hay, mineral constituents, digestibility, (40) 769.
 - notes, (26) 362; (27) 336; (37) 29.
 - silage from, (27) 872.
 - yields, (29) 224.
- Para rubber**, *see* Rubber.
- Parabolas**, fitting of, (39) 179.
- Parabolocetratus viridis**, notes, (27) 859.
- Paracalocoris**—
- colon, notes, (30) 852.
 - colon, oviposition, (34) 255.
 - hawleyi, life history and remedies, (38) 559.
 - nearctic species, (36) 654.
 - scrupæus, notes, (33) 252; (34) 752.
 - spp., notes, (30) 359.
- Paracasein**—
- compounds, composition and properties, (29) 9.
 - compounds, preparation and properties, (29) 805.
 - digestibility as affected by rennin, (36) 559.
 - of cow's and goat's milk, cleavage, (27) 12.
 - of milk, tryptic and peptic cleavage, (26) 565.
 - preparation, (29) 11.
- Paracharitopus lecanii** n.s.p., description, (31) 355.
- Parachrysocharis**—
- javensis n.g. and n.s.p., description, (37) 667.
 - semilava n.s.p., description, (37) 570.
- Paraclemensia acerifoliella**, notes, (28) 157.
- Paracolon** infections in fowls, (40) 685.

- Paracresol** in oil, germicidal power, (40) 882.
- Para-dichlorobenzene** as a fumigant, (32) 650.
- Paradol**, notes, (37) 612.
- Paraffin**—

 - as wood preservative, (27) 314.
 - destruction by bacteria and molds, (32) 523.
 - effect on accumulation of ammonia and nitrates in soils, (37) 812.
 - effect on turnip seed, (32) 851.
 - emulsions, wetting power, (37) 759.
 - insecticidal value, (27) 755.
 - nicotin emulsion, use, (39) 763.
 - oil emulsion as a contact insecticide, (38) 762.
 - orientation of small objects in, (38) 497.
 - paper as surgical dressing, (39) 488.
 - preservation of eggs with, (29) 172.
 - treatment of burns by, (40) 780.

- Paraffined dressings**, action on wounds, (40) 779.
- Paragonimus westermani**, intermediate host, (35) 384, 681.
- Paragrèles**, electric, (31) 615.
- Paragus** spp., life histories (26) 349.
- Parahydroxybenzoic acid**, isolation from soil, (37) 709.
- Paraleptomastix**—

 - abnormis in California, (34) 451.
 - abnormis n.s.p., description, (34) 456.
 - abnormis, notes, (39) 461; (40) 359.
 - abnormis, studies, (37) 569.
 - notatus n.s.p., description, (37) 467.

- Paraleurocerus bicoloripes** n.g. and n.s.p., description, (34) 857.
- Paraleyrodes perseæ**, notes, (27) 455.
- Paralysis**—

 - in horses and cows due to ingestion of fodder, (29) 780.
 - in lambs, relation to Dermacentor venustus, (29) 482.
 - infectious bulbar, in Brazil, (28) 184.
 - of vestibular nerve in pigeons, etiology, (33) 279.

- Paramecium**—

 - resistance to potassium cyanid, (40) 455.
 - selection experiments, (39) 179.

- Paramelitensis**, notes, (27) 681.
- Paramphistomidae** of North America, (38) 365.
- Paramphistomum** sp. in Philippines, (37) 277.
- Paramyioecema**, new genus, description, (37) 569.
- Parana grass**, cercopid enemy, (40) 856.
- Paranagrus** n.g. and n.s.p., descriptions, (37) 856.
- Parandra brunnea**—

 - notes, (28) 156.
 - studies, (33) 457.

- Paranuclein**, antigenic properties, (29) 174.
- Paranusia bifasciata** n.s.p., description, (31) 355.
- Paraphelinus**—

 - perkinsi n.s.p., description, (38) 467.
 - speciosissimus, studies, (36) 258.
 - spp. of British Guiana, (38) 467.
 - tomaspidis n.s.p., description, (31) 458.

- Paraphenylendiamin**, effect on milk, (29) 806.
- Paraplegia**—

 - enzootic, in sheep, (28) 183; (38) 687, 688.
 - infectious, in horses, studies, (27) 188.

- Paraptochus sellatus**, notes, (32) 651.
- Pararabin**, effect on horse serum (37) 376.
- Parasa latistriga**, notes, (36) 654.
- Parascalops breweri**, notes, (31) 154.
- Parasetigena segregata**—

 - biology, (35) 253.
 - notes, (27) 58.
 - studies, (29) 760.

- Parasimulium** n.g. and n.s.p., description, (31) 254.
- Parasiorola cellularis**, notes, (29) 253.
- Parasite** extracts, complement fixing reactions with (28) 880.
- Parasites**—*see also* Animal parasites, Insect parasites, and specific forms.
 - as affected by anthelmintics, (28) 80.
 - genetic relationships, (33) 823.
 - internal, in Queensland, (39) 556.
 - internal, of pigs, (33) 278.
- intestinal**—

 - detection, (34) 682.
 - of poultry, remedies, (38) 83.
 - protection against digestive enzymes, (33) 478; (38) 582.
 - toxins of, (34) 879.
 - vermifuges for, (38) 883.

- minute hymenopterous**, handling, (29) 658.
- notes**, (29) 855.
- tropical**, (38) 580.

- Parasitic—
infestation, effect of cold on, (40) 684.
specialization, digest of data, (32) 822.
- Parasitoides, lectures on, (30) 587.
- Parasitism—
and Eosinophilia, (34) 276.
and symbiosis, differentiation, (28) 35.
in plants, studies, (26) 433.
normal, studies, (38) 647.
- Parasitology—
animal, treatise, (26) 174.
laboratory guide, (30) 654.
of agricultural plants, treatise, (30) 536.
domestic animals and man, treatise, (32) 777.
domestic animals, treatise, (26) 882.
treatise, (31) 177.
- Paratetranychus citri, *see* Citrus red spider.
- Paratettix, breeding experiments, (40) 367.
- Parathyroid—
gland, effect on nitrogenous metabolism in sheep, (32) 562.
gland of domestic animals, (29) 377.
tetany in cats and dogs, (27) 787.
- Paratimia conicola n.g. and n.sp., description, (34) 254.
- Paratoxin, use against tuberculosis, (27) 682.
- Paratiroza cockerelli—
notes, (35) 658.
remedies, (40) 162.
studies, (37) 849.
- Paratuberculosis in bovines, notes, (28) 181.
- Paratyphoid—
B bacillus detection in meat, (26) 480.
B bacillus in healthy calves, (26) 381.
B, studies, (40) 83.
bacilli—
equine, agglutination test, (40) 289.
from hog-choleera cases, (40) 480.
relation to abortion in mares, (33) 183.
vaccination with, (40) 289.
bacteria as causative agents of disease in birds, (40) 685.
bacteria in swine, (40) 783.
diagnosis, (31) 878.
enteritidis group, differentiation, (39) 188, 587.
enteritidis group, studies, (40) 478, 780.
fevers, evolution of, (39) 285.
infection—
detection, (29) 881.
in man and animals, relationship, (30) 181.
notes, (28) 164.
relation to bacterial food poisoning, (29) 64.
investigations, (27) 378.
- Para-urazin assimilation by plants, (26) 32.
- Parcel post—
business methods, (38) 895.
for shipping eggs, (31) 370; (32) 572; (38) 72.
marketing apples by, (36) 742.
marketing by (31) 789; (34) 392, 690, 792; (36) 91.
marketing experiments, (30) 593.
- Parchment paper, examination, (30) 179.
- Pardianlomella ibseni, notes, (36) 155.
- Parenchyma wood, formation after winter injury, (36) 431.
- Parepyris sylvanidis n.sp., description, (31) 355.
- Paresis, parturient, *see* Milk fever.
- Parexorista—
caridei n.sp., description, (40) 855.
luorum, parasitic on gipsy moth, (31) 652.
- Parhelia 90° from sun, (38) 210.
- Parhelic circle at Fargo, N. Dak., (37) 115.
- Paria canellus, *see* Strawberry root worm.
- Paris green—
analyses, (26) 65, 324, 715; (27) 441; (28) 493, 626; (30) 697; (31) 49, 142; (32) 169; (33) 47; (34) 436, 639; (37) 243; (39) 240.
combined arsenious oxid in, (26) 658.
effect on sugar cane roots, (38) 238.
insecticidal value, (32) 158.
methods of analysis, (32) 296; (36) 715.
preparation, (40) 801.
preparation and properties, (28) 308.
scald of tobacco plants by, (34) 351.
use, (32) 632.
use on tobacco, (26) 638.
- Park system for Chattanooga, (26) 338.
- Parkinsonia—
africana, analyses and bibliography, (32) 167.
microphylla, transpiration in, (34) 728.
- Parks, bibliography, (26) 338.
- Parks, treatise, (36) 743.
- Parlatoria—
blanchardi, notes, (29) 255.
blanchardi, remedies, (30) 358.
pegandei, *see* Chaff scale.
proteus, notes, (28) 854.
zizyphus, notes, (32) 56.
- Parsley—
as affected by formaldehyde, (26) 731.
cold frame disease of, (35) 847.
culture, (26) 393.
seeds, large v. small, (31) 634.
sheep's, notes, (30) 434.
stalk weevil, notes, (30) 655.
- Parsnip—
mildew, notes, (36) 541.
poison, toxicity, (29) 111.
root knot, notes, (39) 52.
seed, production, (33) 226.
soft rot, notes, (31) 641.
webworm, *see* Depressaria heracliana.
- Parsnips—
culture experiments, (35) 341.
fertilizer experiments, (26) 819; (30) 435.
food value, (36) 863.
mulching v. clean culture, (33) 534.
winter storage, (38) 442.
- Parthenium argentatum—
constituents of, (27) 244.
culture experiments, (29) 443.
rubber and resin content as affected by rainfall, (30) 744.
studies, (39) 246.
- Parthenocarp—
and seed formation in bananas, (31) 535.
in fruits, (34) 226.
in Nicotiana, (34) 136.
notes, (36) 331.
- Parthenogenesis—
among fruit blossoms, (26) 540.
heredity in, (32) 448.
in higher plants, (38) 331.
Nicotiana, (30) 224; (34) 136.
plants, (30) 329; (34) 727.
tomatoes, (34) 233.
various plants, (29) 837.
relation to sex, (38) 261.
rudimentary, in pheasants, (31) 765.
- Partridge—
berry, notes, (33) 143.
peas as cover crop for orchards, (37) 833.
- Partridges—
European or gray, propagation, (28) 752.
handbook, (27) 774.
Hungarian, feeding habits, (30) 454.
Hungarian, in Missouri, (27) 550.
- Parturient apoplexy, paralysis or paresis, *see* Milk fever.
- Parturition, physiology of, (26) 277.
- Paspalum—
conjugatum—
Helminthosporium n.sp. on (39) 248.
notes, (30) 229.
- dilatatum—
as forage crop, (37) 132.
as pasture grass, (30) 435; (35) 562; (40) 327.
culture experiments, (28) 136; (35) 829; (37) 730; (38) 827.
culture in Guam, (32) 731.
culture in Porto Rico, (29) 631.
culture in Rhodesia, (27) 32.
fertilizer experiments, (27) 32.
in New Zealand, (40) 239.
poisoning cattle, (39) 891.
root disease of, (29) 152.
root system, (36) 438.
varieties, (27) 32.
- marginatum, notes, (30) 229.
notatum, toxicity to cattle, (38) 687.
poisoning in cattle, (34) 676.
scrobiculatum, analyses, (30) 565.
spp., analyses, (31) 431, 863.
spp., culture experiments, (27) 234.
spp., culture in Hawaii, (32) 729.
spp., of Java, (30) 525; (35) 440.
spp., notes, (26) 362.
stoloniferum, distribution of stomata in, (32) 221.
varieties, (30) 434.

- Passalora hevea* n.sp., notes, (30) 453; (34) 442; (38) 356.
- Passer domesticus*—
destruction of locusts by, (28) 351.
feeding habits, (28) 450.
- Passerculus sandwichensis* savanna, destruction of grain aphids by, (29) 452.
- Passerherbulus* and its allies, (38) 556.
- Passeriformes*, new pycnonotine family, (38) 856.
- Passeromyia heterochaeta*, notes, (36) 359.
- Pastiflora*—
caerulea, formation of mechanical tissue in, (27) 631.
edulis as trap for fruit flies, (29) 657.
laurifolia, cold storage of, (32) 439.
teratological variations in, (32) 35.
- Pastion*—
fruit brown spot, notes, (34) 644.
fruit weevil, notes, (26) 657.
vine beetle, notes, (40) 654.
- Pasta Caffaro, tests, (28) 245.
- Paste and pastry, methods of analysis, (32) 505.
- Pastes, Italian, analyses, (28) 460.
- Pasteurella*—
equine, relation to equine influenza, (26) 587.
studies, (31) 381.
- Pasteurellosis*—
in reindeer, studies, (31) 381.
in sheep, (29) 179.
- Pasteurization*—*see also* Cream, Milk, etc.
colon test of efficiency, (32) 775.
effect on mold spores, (35) 276.
effect on streptococci, (31) 574.
for butter making, (27) 179.
of cream, studies, (33) 473.
milk, (26) 275, 282, 283; (27) 178, 281.
milk and cream, (31) 188.
milk, efficiency, (27) 178.
resistance of lactic acid bacteria to, (33) 675.
résumé, (34) 674.
- Pasteurizer*, home, construction, (31) 771.
- Pastry*—
and hygiene, paper on, (32) 760.
as source of infection, (26) 562.
detection of milk in, (40) 612.
- Pasture*—
crops—
for cut-over lands, (39) 230.
for growing pigs and brood sows, (30) 100.
handbook, (29) 530.
trials, (39) 130, 434.
utilization, (39) 880.
experiments, (40) 32.
grasses—
analyses, (33) 227.
composition as affected by fertilizers, (27) 125.
culture in New York, (39) 532.
fall sowing, (33) 98.
for Texas, (37) 827.
in Guam, (40) 327.
mixtures for, (31) 37; (32) 566; (33) 430.
mixtures for New Zealand conditions, (39) 835.
mixtures, notes, (34) 95.
mixtures, tests, (27) 735; (37) 533; (38) 30; (40) 72, 374.
native, of United States, (33) 227.
tests, (40) 72, 374, 432.
water requirements, (33) 228.
herbs, indigenous to Australia, (26) 830.
land, Alpine, in Italy, (27) 276.
land, crane fly affecting, (28) 160.
land in United States, (39) 192.
land, old, improvement, (40) 824.
land, renovation, (26) 436.
plants, root systems of, (35) 639.
problems, papers on, (40) 300.
region east of Rockies, climatic features, (40) 117.
region of United States, climatic and edaphic factors, (39) 735.
soils, English work on, (28) 216.
survey of West Virginia, (39) 169.
- Pastures*—*see also* Grassland and Meadows.
Alpine, effect on milk production, (28) 774.
Alpine, in Province of Como, (28) 364.
Alpine, treatise, (26) 130.
and meadows, treatise, (26) 830.
average condition by months, (39) 811.
- Pastures*—Continued.
carrying-capacity tests, (39) 879.
composition of herbage, (37) 230.
coyote-proof, for sheep, (26) 73.
culture experiments, (30) 133.
dry land, notes, (30) 435.
establishment, (33) 332.
fertilizer experiments, (26) 40, 533, 534, 629; (27) 234, 638, 834; (29) 517, 632, 728; (30) 73, 83; (31) 470, 821, 829; (32) 368; (33) 227, 527; (35) 31; (36) 425, 735, 740, 829; (38) 432; (39) 22, 530, 633.
for cows, (37) 271; (40) 575.
irrigated lands, (32) 628.
pigs, (31) 470.
pigs in the South, (39) 479.
the cotton belt, (32) 534.
work horses, (39) 479.
importance in dairying, (32) 870.
improvement, (26) 533; (37) 230.
in Manitoba and Saskatchewan, (36) 437.
National Forests, (35) 167.
New England, (33) 526.
southeastern England, nutritive value and fertility, (32) 121.
southeastern Ohio, (36) 34.
Wyoming, (39) 135.
insects affecting, (37) 847.
- irrigated*—
clipping experiments, (38) 30.
establishing, (38) 130; (39) 834.
grasses for, (36) 132; (38) 337; (39) 434; (40) 432.
management, (35) 734; (37) 640.
notes, (40) 374.
tests, (38) 175.
value, (35) 173.
- lowland moor, management, (37) 333.
management, (31) 37; (33) 527.
management in Kansas, (39) 439; (40) 330.
management in Sweden, (39) 633.
moorland, treatise, (31) 830.
of central France, improvement, (30) 733.
of German East Africa, (28) 364.
on peat soils, (38) 134.
peaty, fertilizer experiments, (37) 134.
permanent, (38) 796.
permanent, formation, (37) 826.
phosphates for, (31) 174.
planting and care, (30) 829.
preparation and care, (30) 230.
seeding, (31) 830; (38) 33.
sheep-carrying capacity, (30) 770.
stump-land, tests, (38) 176.
top dressing, (27) 599.
watering devices for, (33) 188.
- Pasturing* experiments on irrigated fields, (40) 371.
- Pataleta*, notes, (30) 783.
- Patellina*—
fragariae n.sp., description, (36) 452.
sp. on strawberries, (33) 744.
- Patent medicines*—
composition, (40) 182.
examination, (37) 63.
notes, (32) 661.
- Pathological technique*, treatise, (26) 276; (40) 676.
- Pathology*—
chemical studies, (40) 201.
chemical, treatise, (39) 79.
of man and animals, treatise, (33) 476.
papers on (29) 676.
papers on from Rockefeller Institute, (33) 279.
special, guide, (36) 378.
studies, (31) 277.
tables of statistical error, (26) 773.
textbook, (27) 576.
treatise, (28) 178; (29) 174; (31) 276; (32) 78, 270.
- Paths, roads, and bridges*, treatise, (27) 687.
- Patriotic Farmers' Fund* in New Jersey, (40) 490.
- Patrogenesis* in plant hybrids, (36) 28.
- Patrons of Husbandry*, history, (36) 688.
- Patterns*, drafting, (30) 462.
- Patwa*, culture and improvement, (28) 633.
- Pavements*—*see also* Concrete and Roads.
and paving materials, treatise, (31) 385.
and roads, textbook, (28) 84.
bituminous, paper on (26) 890.
brick, (40) 888.
brick, construction, (35) 183.
brick, monolithic construction, (36) 384.

Pavements—Continued.

- cement-concrete, cracks in (37) 88.
- concrete—
 - and brick, tests, (30) 387.
 - construction, (27) 386; (35) 390.
 - cracking and buckling, (38) 891.
 - design, (36) 890.
 - failure of, (30) 386.
 - stresses on, (31) 186.
 - treatise, (30) 386.
 - use of hydrated lime in, (31) 387.
- construction, (33) 782.
- construction and maintenance, (27) 189.
- construction, treatise, (36) 285.
- economy of various types, (34) 484.
- for heavy traffic roads, (33) 290.
- macadam and concrete, (36) 188.
- monolithic, in Vermilion County, Illinois, (36) 188.
- rock-asphalt, construction, (29) 591.
- small cube, tests, (30) 689.
- specifications, handbook, (29) 387.
- treatise, (31) 90.
- Pavetta* spp.—
 - nitrogen-fixing bacteria in leaves, (27) 225.
 - symbiosis with bacteria, (32) 327.
- Paving—
 - block oil, specifications, (26) 544.
 - blocks, preservation, (33) 544.
 - blocks, wood, improving strength of, (28) 441.
 - brick, tests, (35) 390.
 - brick, wire-cut and re-pressed, tests, (31) 687.
 - cements, asphalt, specifications, (30) 290.
- Pavonia procumbens*, variation in, (39) 231.
- Pea, *see also* Peas.
 - and oat silage, notes, (27) 736; (37) 75.
- aphis—
 - control by lady beetles, (34) 555.
 - green, investigations, (35) 461.
 - green, remedies, (32) 652.
 - remedies, (30) 654.
 - studies, (34) 62.
 - synonymy, (35) 256.
- bacterial disease, studies, (39) 147.
- blight, notes, (32) 544.
- blight, studies, (28) 844; (29) 447; (33) 344.
- blight, treatment, (31) 840; (35) 545.
- bran, analyses, (26) 714; (36) 765; (38) 368; (40) 571.
- chink, notes, (40) 165.
- collar disease, studies, (36) 749.
- diseases, notes, (27) 45; (38) 48; (39) 52, 354, 453, 850; (40) 845.
- diseases, treatment, (32) 545.
- feed, analyses, (27) 170.
- flour, agglutinating properties, (31) 774.
- flour bread, studies, (40) 762.
- flour, digestibility of protein, (33) 564.
- forage, effect on milk and butter, (34) 570.
- Fusarium wilt, studies, (39) 853.
- hay, analyses, (34) 469.
- hay, veiny, analyses, (33) 759.
- hulls, analyses, (27) 170.
- leaf spot, treatment, (33) 846.
- meal, analyses, (26) 165, 665, 666; (27) 775; (28) 364; (30) 68; (33) 371; (35) 867; (38) 67.
- mildew, notes, (32) 544.
- Pods, analyses, (38) 626.
- protein, nutritive value, (39) 666.
- roots, absorption and excretion of salts by, (26) 624.
- seedlings as affected by ultraviolet rays, (26) 430.
- seeds, large v. small, (31) 634.
- silage, acidity, (39) 310, 878.
- sitoid, notes, (40) 358.
- soup, examination, (31) 659.
- starch, studies, (31) 828.
- straw, composition and digestibility, (34) 565.
- thrips, notes (31) 59; (32) 448, 848; (37) 257.
- thrips, studies, (34) 450.
- tree, Siberian, culture in Alaska, (29) 743.
- vine hay, analyses, (26) 714.
- weevils—
 - biology and control, (39) 363.
 - descriptions and remedies, (40) 64.
 - in British Columbia, (37) 459.
 - in Hawaiian Islands, (40) 266.
 - in South Africa, (40) 861.
 - leaf-eating, biology, (34) 65.
 - studies, (36) 855.
 - summary of information, (40) 170.

Peach—

- and almond graft hybrid, description, (29) 838.
- aphis—
 - black, notes, (38) 463.
 - black, remedies, (38) 358.
 - green, alternate hosts, (39) 464.
 - green, notes, (26) 755; (32) 753; (35) 54; (38) 462.
 - green, remedies, (27) 356.
 - green, wing development, (40) 456.
 - life history and remedies, (30) 156.
- as rootstock, tests, (40) 445.
- bacterial spot, treatment, (37) 842.
- bark beetle, studies, (31) 852.
- borer—
 - California, studies, (26) 61.
 - control in West Virginia, (35) 657.
 - eastern, notes, (26) 452; (28) 853.
 - lesser, life history, (32) 349.
 - lesser, notes, (36) 549.
 - lesser, studies, (37) 159, 396.
 - mechanical protector for, (38) 858.
 - notes, (26) 150, 857; (27) 755; (28) 752; (31) 848; (37) 158, 159.
 - protector, (39) 843.
 - remedies, (27) 54; (28) 395; (30) 355; (32) 551; (36) 855; (38) 261, 861; (40) 162.
 - studies, (30) 659; (34) 161; (36) 857; (39) 765; (40) 166, 167.
- brown rot—
 - canker, studies, (29) 848.
 - control, (40) 749, 851.
 - dusting, (40) 445.
 - notes, (35) 351.
 - studies, (32) 751.
- brown rust, treatment, (28) 652; (38) 454; (39) 345, 349.
- bud mite, notes, (26) 759.
- buds, analyses, (31) 837.
- buds, resistance to frost, (30) 839.
- buds, winter injury to (35) 143; (36) 341.
- cankers, notes, (32) 241.
- Coryneum rust, notes, (33) 549.
- crown gall, inoculation experiments, (29) 449.
- curl, notes, (32) 544; (40) 748.
- die-back or winterkilling, notes, (30) 537.
- disease, little, (36) 849; (37) 755; (39) 756.
- disease, new, (39) 151.
- disease, notes, (27) 349.
- diseases—
 - and pests in Georgia, (35) 447.
 - and pests, treatment, (38) 843.
 - description, (31) 449.
 - description and treatment, (27) 539.
 - in Arkansas, (39) 756.
 - in Ontario, (36) 141.
 - notes, (26) 55, 137, 239, 742, 844; (27) 452, 652, 849; (31) 644; (32) 641; (33) 741; (36) 750; (38) 50, 550; (39) 345, 349, 353; (40) 249, 251.
- spray calendar for, (26) 539.
- studies, (32) 441, 751; (33) 544.
- treatment, (27) 855; (28) 148; (29) 146; (30) 344; (31) 843; (32) 51; (33) 349; (37) 51.
- drop disease, studies, (33) 445.
- drying industry in Chile, (27) 313.
- flowers, polymorphism in, (28) 540.
- fly, notes, (30) 757.
- foliage, studies, (26) 407.
- fruit buds, winter injuries, (28) 740, 741.
- gummosis, bacterial, (39) 151.
- gummosis, cause, (27) 350.
- gummosis, notes, (28) 246.
- heart rot, notes, (38) 646.
- industry around Vineland, N. J., (32) 534.
- juice, preparation, (33) 816.
- juices, studies, (29) 711.
- kernels, hydrocyanic acid content, (28) 477.
- kernels, microscopic identification, (28) 565.
- leaf—
 - and twig curl, notes, (36) 647.
 - curl fungus, treatment, (26) 144.
 - curl, notes, (30) 353, 647, 750; (34) 144; (36) 347; (38) 546, 848; (39) 146.
 - curl, studies, (33) 347; (37) 250, 655.
 - curl, treatment, (28) 152; (30) 50; (32) 241; (34) 248; (35) 457, 753; (40) 48, 348, 749.
 - glands, taxonomic value and structure, (34) 739.
 - rust, description, (28) 549.
 - weevil, notes, (36) 549.
- leaves, chlorophyll compounds of, (32) 823.

Peach—Continued.

leaves, free hydrocyanic acid in, (27) 635.
 mildew, inoculation experiments, (33) 647.
 mildew, notes, (36) 541.
 mildew, studies, (33) 347, 447.
 mold, notes, (31) 539.
 moth, oriental, *see* Laspeyresia molesta.
 nematode root disease, notes, (28) 235.
 nursery stock die-back and gumming, (34) 646.
 orchards, care and management, (35) 447.
 orchards, winter heating, (36) 795.
 package law in New Jersey, (34) 639.
 pollen, frost resistance of, (29) 437.
 pollen, viability, (32) 534; (34) 144.
 powdery mildew, treatment, (36) 350.
 rosette and its control, (40) 158.
 rust, notes, (37) 453.
 rust, treatment, (29) 551; (31) 53; (40) 348.
 sawfly, notes, (26) 856.

scab—

and bacteriosis, notes, (39) 345.
 artificial production, (31) 449.
 dusting experiments, (39) 55.
 in Netherlands, (33) 649.
 studies, (36) 545.
 treatment, (33) 247; (34) 146; (39) 349; (40) 445.

scale, European, *see* Lecanium persicae.

scale, notes, (38) 464.

scale, West Indian—

control, (28) 452; (32) 755; (34) 456; (36) 355.
 control in Italy, (29) 854.
 host plants of, (26) 248.
 in Argentina, (26) 452; (27) 556; (37) 358.
 notes, (30) 655; (32) 847.
 parasites of, (27) 455; (39) 465.

seed weevil, notes, (27) 255.

shipping crates, press for, (37) 490.

shot-hole disease, bacterial, (39) 552.

skins, isolation of fat from, (29) 459.

slug, studies, (26) 152.

soils of Massachusetts and Connecticut, (32) 835.

spot, notes, (40) 53.

stem canker, notes, (29) 547.

stones, histological characteristics, (27) 112.

stones, hydrocyanic acid content, (27) 12.

stop-back, notes, (28) 159; (31) 650.

stop-back, relation to tarnished plant bug, (29) 354; (40) 455.

tip moth, notes, (31) 653.

tree bark beetle, notes, (36) 258.

tree blight, notes, (26) 147.

tree trunks, introduction of solutions into, (36) 740.

tree wounds, painting, (35) 446.

trees, injuries by poultry, (34) 144.

twig borer, remedies, (27) 356.

twig miner, notes, (35) 253.

twig moth—

life history and remedies, (31) 454.
 notes, (27) 857; (31) 848; (32) 651; (40) 756.
 studies, (35) 258; (40) 853.

weevil, oviposition, (39) 363.

worm, striped, biology and remedies, (38) 861.

yellow—

and little peach, (32) 344; (38) 546.
 control, (40) 158.
 distribution in nursery stock, (28) 639.
 notes, (26) 850; (30) 349.
 relation to pruning, (39) 255.
 studies, (28) 148; (31) 544; (36) 849; (37) 755; (39) 756.

Peaches—

abnormalities, (36) 837.

acidity, (32) 110; (37) 714.

adaptation and variety tests, (29) 41.

as affected by—

boron, (39) 429.
 fertilizers, (29) 40.
 lime-sulphur mixture, (29) 640.

Bacterium pruni on, (40) 638.

blooming and ripening period, (28) 639; (40) 836.

blooming dates in Utah, (39) 46.

breeding, (39) 541.

breeding experiments, (35) 837; (36) 837; (39) 746.

bud variation in, (26) 46.

budding experiments, (33) 538.

Peaches—Continued.

cambial activity, (37) 127.

classification, (28) 145.

cold storage experiments, (28) 740.

composition as affected by—

brown rot, (32) 751.

irrigation, (29) 236.

correlation between flower and fruit, (29) 424.

cost of precooling, (34) 637.

cost of production, (29) 439; (34) 344, 739; (36) 42; (37) 42.

critical months, (39) 811.

crossbreeding experiments, (36) 742.

crown gall affecting, (28) 447.

crown fall resistance in, (36) 352.

culture, (28) 742; (30) 643; (32) 338, 751; (38) 844.

culture—

experiments, (28) 142; (34) 144; (36) 837; (38) 242; (39) 347; (40) 444.

in Alabama, (26) 137.

Argentina, (29) 541.

Egypt, (34) 232.

Guam, (30) 41.

Indiana, (27) 452; (38) 246.

Maryland, (26) 742.

Mesa County, Colo., (37) 241.

Michigan, (30) 443.

New Jersey, (28) 341.

New York, (26) 239; (35) 836.

Ontario, (27) 539; (36) 140.

southern Texas, (32) 539.

southern Utah, (30) 41, 442.

the Ozarks, (29) 237.

Uruguay, (32) 745.

Utah, (33) 638.

Virginia, (33) 641.

West Virginia, (30) 144.

treatise, (30) 42; (40) 149.

destruction, (26) 334.

double, (39) 746.

dried, analyses, (30) 861.

dried, inoculation experiments with brown rot fungus, (33) 247.

dried, preparation and use, (29) 462.

dry fig beetle on, (40) 853.

drying, (27) 146; (37) 114, 509, 715.

dust v. liquid spraying, (37) 42, 832.

dusting experiments, (38) 541, 546; (39) 349; (40) 445.

effect of axillary shoot on development and composition, (32) 837.

Elberta, bud sport, (36) 837.

factors determining color and size, (31) 440.

fall v. spring planting, (26) 238.

fertilizer experiments, (31) 335; (32) 635; (33) 236, 840; (35) 238, 239, 837; (37) 40, 743; (38) 42, 639; (39) 139, 347.

floral biology, (35) 436.

flower and fruit color in, (35) 36.

flower thrips affecting, (33) 746.

fruit stocks for, (38) 345.

grading, (35) 542.

graphic summary of seasonal work, (39) 495.

green, anaerobic respiration, (29) 538.

harvesting and packing, (35) 743.

host plant of fruit fly, (26) 758.

improvement by bud selections, (28) 541.

infection with Cladosporium carpophilum, (33) 349.

injury by cold, (26) 749; (37) 344; (39) 745.

inoculation experiments with brown rot fungus, (33) 247.

insects affecting, (26) 137, 742; (27) 452; (35) 447; (36) 141; (38) 460, 843.

irrigation experiments, (33) 683; (35) 143.

June drop of, (34) 144.

killing by freezing, (32) 42.

Lepidoptera infesting, (40) 756.

localization of acids and sugars in, (36) 110.

marketing, (33) 440.

marketing in New York, (35) 743.

new, description, (29) 838; (31) 337; (33) 238; (35) 37.

new insect enemy of, (36) 358.

nursery disease of, (33) 248.

of New York, monograph, (33) 42.

packing, (28) 237; (38) 43.

packing and shipping, (34) 639.

Peaches—Continued.

- pear thrips affecting, (27) 156.
- peeling, chemical process, (39) 510.
- picking and handling, (34) 437, 739.
- plant food removed by, (36) 39.
- planting costs, (38) 41.
- planting with dynamite, (32) 535; (35) 236.
- pollination experiments, (34) 233.
- precooling experiments, (35) 40.
- preservation by pressure, (32) 416.
- production in West Virginia, (37) 745.
- pruning, (30) 739; (32) 837; (39) 541.
- pruning—
 - and training, (37) 344.
 - at time of planting, (36) 41.
 - experiments, (30) 838; (38) 43; (39) 344.
 - in summer, (31) 837.
- Ray, description, (26) 541.
- reducing and nonreducing sugars in, (29) 503.
- respiration in gases, (29) 135.
- retrogressive metamorphosis in, (27) 230.
- "salmon fly" injury, (39) 257.
- seedling, variation in, (30) 144.
- self-fertility and self-sterility in, (31) 335.
- self-fertility of, (33) 236.
- shipping experiments, (35) 646.
- smudging experiments, (33) 440.
- sodium nitrate for, (39) 328.
- spray schedules, (39) 39, 140, 242.
- spraying, (33) 439, 538; (37) 251, 744; (38) 550; (39) 358.
- spraying experiments, (27) 143, 439; (28) 436, 652, 740; (34) 146; (35) 343; (39) 345.
- spraying v. dusting, (32) 550.
- stocks for, (32) 337.
- stones and skins, analyses, (38) 626.
- sulphur paste as a spray for, (36) 351.
- summer spraying, (29) 146.
- supply and distribution in 1914, (34) 149.
- temperatures injurious to, (27) 413, 439.
- Texas wild, description, (30) 41.
- thinning experiments, (37) 448; (39) 344.
- thrips injuring, (40) 650.
- tree census in Washington, (40) 340.
- varieties, (28) 436; (34) 737; (36) 837; (37) 241, 832; (38) 41.
- varieties—
 - and classification, (39) 141.
 - Australian, (39) 844.
 - blooming and ripening periods, (40) 836.
 - for central New York, (26) 336.
 - home orchard, (40) 341.
 - New Jersey, (33) 439.
 - Ohio, (37) 241.
 - Pacific Northwest, (29) 745.
 - Pennsylvania, (28) 742; (34) 149.
 - growth records, (40) 444.
 - in Oklahoma, (27) 241.
 - resistant to disease, (27) 849; (29) 246.
 - susceptible or resistant to cold injury, (39) 745.
 - winter injury, (40) 348, 835.
 - winter-injured, pruning, (40) 835.

Peacock, and—

- domestic hen, hybrid, notes (30) 471.
- guinea fowl hybrids, notes, (33) 575.

Peanut—

- bacterial disease, notes, (29) 448, 646.
- bacterial disease, studies, (34) 52.
- bran, analyses, (26) 266.
- bran and meal, analyses, (30) 68.
- bran and shells, methods of analysis, (29) 311.
- bran as feeding stuff, (30) 371.
- butter, bacteriology of, (40) 14.
- butter, examination, (33) 64.
- butter, manufacture, (28) 24.
- by-products, composition and feeding value, (39) 473.
- cake—
 - acidity, (32) 259; (35) 770.
 - analyses, (26) 266, 267, 363, 369, 468; (27) 570, 872; (28) 404; (30) 268, 467; (31) 467, 833; (33) 870; (34) 72; (36) 572; (38) 369, 572.
 - determination in feeding stuffs, (33) 504.
 - effect on composition of butter, (36) 875.
 - effect on milk and butter, (34) 570.
 - effect on milk production and quality, (26) 476.
 - feeding value, (26) 468; (29) 869; (34) 371; (38) 572.

Peanut—Continued.

- cake—continued.
 - fertilizing value, (33) 131; (38) 220, 527.
 - for cows, (29) 577.
 - for steers, (37) 769.
 - nutritive value, (28) 673.
 - sugar content, (37) 208.
- disease, description, (30) 243.
- diseases—
 - in West Indies, (37) 452.
 - notes, (29) 347; (34) 744; (39) 146, 453, 548.
 - studies, (32) 546; (33) 245.
- flour, analyses, (39) 870.
- flour, digestibility, (39) 871.
- flour, manufacture and composition, (40) 268.
- flour, recipes, (39) 267.
- fungus disease, (31) 641.
- fungus disease, treatment, (29) 748.
- hay and hulls, mineral constituents, digestibility, (40) 769.
- hay, chloroform extract of, (31) 71.
- hay, composition, (27) 668.
- hay, digestibility, (27) 669.
- hay, ground, analyses, (38) 369; (40) 571.
- hearts, analyses, (30) 868.
- hulls, analyses, (26) 568.
- hulls and hay, digestibility and productive value, (37) 865.
- industry, status of, (39) 442.
- leaf curl, notes, (36) 847.
- leaf rust, notes, (40) 155.
- leaf rust, treatment, (32) 642; (34) 746; (35) 44; (37) 550.
- leaf spot, notes, (39) 453.
- leaf spot, studies, (34) 645.
- meal—
 - analyses, (26) 568; (30) 268; (31) 864; (33) 170, 870; (34) 263, 467, 665; (35) 562, 867; (36) 65, 167, 667, 765; (38) 67, 369, 572, 665; (39) 270; (40) 571, 665.
 - bacterial flora of, (32) 75.
 - effect on composition of milk, (26) 273.
 - effect on lard, (40) 772.
 - feeding value, (39) 176, 371, 374, 376, 482, 576, 577, 674, 778, 784; (40) 75, 278, 279, 874.
 - for chicks, (37) 682.
 - for poultry, (39) 176, 376.
 - palatability and nutritive value, (38) 66.
- offal, analyses, (38) 572.
- oil—
 - cake feed, analyses, (40) 571.
 - chemical and physiological tests, (33) 362.
 - detection, (27) 207; (29) 613; (36) 414.
 - detection in oils and fats, (38) 615.
 - detection in olive oil, (30) 14.
 - determination, (30) 209.
 - determination in mixtures, (37) 312.
 - digestibility, (36) 860.
 - hardened, analyses and digestibility, (33) 564.
 - manufacture, (35) 806; (39) 9.
 - physical constants, (35) 312.
 - production and consumption in United States, (40) 614.
 - production and use, (37) 511.
 - refractive index, (27) 614.
 - specific heat, (40) 68.
- press cake, analyses, (40) 72.
- proteins, chemistry of, (37) 8, 468, 501; (40) 109.
- Rhizoctonia diseases, notes, (30) 845.
- root rot, notes, (29) 445.
- rust, treatment, (39) 548.
- shells, analyses, (38) 626.
- shells, fertilizing value, (33) 131.
- skins and meal, analyses, (39) 773.
- stalks, fertilizing value, (33) 131.
- straw, analyses, (37) 234.
- tikka disease, (31) 243; (34) 50; (39) 146; (40) 48.
- vines, ground, analyses, (34) 767.
- wilt, notes, (39) 52; (40) 348.
- wilt, studies, (37) 49.

Peanuts—

- amino acid in, (33) 665.
- analyses, (26) 132, 233; (31) 528, 833; (35) 806.
- as grazing crop for pigs, (37) 679.
- green manure, (32) 41, 423.
- hog pasture, (39) 373.
- host of curlew bug, (27) 162.
- silage crop, (31) 829.
- wheat substitute, (39) 267, 870.

Peanuts—Continued.

- ash analyses, (29) 861.
- Bambarra, culture experiments, (27) 233.
- breeding experiments, (26) 435; (40) 624.
- composition and feeding value, (39) 473.
- composition and nutritive value, (34) 565.
- critical period of growing season, (39) 811.
- culture, (30) 335; (32) 226; (34) 630; (35) 34; (37) 234.
- culture—
 - and recipes, (34) 859.
 - and utilization, (33) 438.
 - experiments, (26) 422; (27) 136, 430, 638; (28) 136, 735; (30) 229, 632, 735; (31) 733, 829; (32) 227; (33) 227; (35) 135; (36) 830; (37) 734; (38) 336, 635, 827, 830, 832; (39) 128, 230, 632; (40) 239.
 - experiments in Fiji, (40) 231.
 - experiments in India, (40) 332, 625, 825.
 - in Belgian Kongo, (31) 41.
 - Burma, (29) 736.
 - cotton belt, (33) 40; (37) 442.
 - Egypt, (37) 138.
 - Guam, (32) 731.
 - India, (28) 736.
 - Kamerun, (26) 132.
 - Madras, (33) 131.
 - Philippines, (26) 361; (36) 231; (40) 231.
 - Rhodesia, (27) 32, 637; (40) 825.
 - southern France, (40) 36.
 - Tucuman, (37) 134.
 - Virginia, (39) 33.
- under dry farming, (30) 435.
- description, (30) 828.
- digestibility and productive value, (37) 865.
- distribution of nitrogen in, (36) 269.
- effect on nitrogen content of soils, (31) 733.
- effect on succeeding crops, (37) 234.
- fertilizer experiments, (30) 422, 631; (27) 430; (28) 825; (30) 34, 525, 820; (31) 421, 829; (37) 233, 825; (38) 336; (39) 33; (40) 230, 231, 239, 323, 624, 625, 825.
- food uses of, (28) 258.
- food value and preparation, (38) 567.
- food value and recipes, (40) 557.
- for pigs, (31) 769; (37) 367; (39) 174, 674.
- formation of oil in, (32) 427.
- grazing-off v. marketing, (40) 667.
- green manuring experiments, (37) 734.
- harvesting and storing, (38) 235.
- history and culture, (31) 833.
- improvement, (28) 736.
- insects affecting, (27) 155; (29) 347; (30) 752; (31) 58; (32) 348; (33) 153; (34) 851.
- irrigation experiments, (28) 588, 828.
- liming experiments, (26) 534; (39) 33.
- loss in weight after harvesting, (38) 635.
- Madagascar, digestibility, (26) 164.
- Mammoth and Spanish, comparison, (29) 230.
- milling, notes, (35) 208.
- mosaic disease, transmission, (36) 544.
- new, notes, (30) 235.
- notes, (26) 362; (30) 437; (35) 739.
- nutritive value, (39) 470, 471, 871.
- oil content, (40) 239.
- permeability of seed coat, (38) 25.
- picking and handling, (26) 41.
- position in pod, relation to productiveness, (39) 739.
- production in St. Vincent, (39) 835.
- proteins of, (35) 712.
- root nodules, (38) 451.
- rot bacteria affecting, (29) 345.
- seed selection experiments, (31) 231.
- seedling experiments, (38) 32; (40) 36, 729.
- selection experiments, (40) 623.
- shelling before planting, (31) 528.
- shelling machines, (39) 9.
- softening effect on pork fat, (37) 680.
- syllabus of lecture on, (27) 299.
- use by prehistoric Americans, (38) 167.
- varieties, (26) 232, 436, 534, 631; (27) 336, 337; (28) 736, 828; (29) 830; (30) 229, 435, 525, 731, 735; (31) 732, 829; (32) 226, 227, 333, 630; (33) 130; (35) 134; (36) 231; (37) 233, 329, 330, 825; (38) 32, 33, 336, 830.
- varieties resistant to wilt, (38) 851.
- variety tests, (39) 33, 128, 337; (40) 228, 230, 239, 332, 624, 625, 729, 823, 825.
- whole pressed, analyses, (38) 369; (40) 571.
- yields, (39) 434.

Pear—

- aphis, false, remedies, (36) 855.
- aphis, woolly, alternate hosts, (39) 464.
- aphis, woolly, studies, (35) 463; (37) 661; (38) 560.
- bacterial blight, relation to *Scolytus rugulosus*, (26) 144.
- bark spot, brown, (39) 251.
- black scab, treatment, (31) 150.
- black spot canker, (35) 696.
- black spot, notes, (30) 541.
- black spot, treatment, (31) 53; (40) 748, 849.
- blight—
 - beetle, notes, (29) 158; (36) 258.
 - beetle, studies, (31) 852.
 - control, (40) 154.
 - description and treatment, (31) 53.
 - distribution, (33) 149.
 - in mountain countries, (40) 252.
 - notes, (29) 247; (30) 245; (31) 644, 746, 843; (33) 53, 534; (34) 351, 647, 648, 739; (36) 849; (37) 52, 755, 846; (38) 47, 848.
 - resistance to, (38) 350.
 - resistant varieties, (33) 53, 640; (35) 447.
 - studies, (34) 647; (35) 36; (36) 351; (38) 650; (40) 348.
 - treatment, (27) 353; (38) 545; (39) 150.
- blister disease, notes, (34) 543.
- blossom bacillus, notes, (40) 749.
- blossom, bacterial blight, (39) 149, 252, 850.
- blossom bacterial disease, notes, (32) 148.
- blossom weevil in Bessarabia, (38) 163.
- branch blister disease, notes, (37) 842.
- brown blotch, studies, (36) 149; (40) 451.
- brown rot, studies, (35) 248.
- brusone, description, (31) 749.
- buds, analyses, (31) 836.
- buds, resistance to frost, (30) 839.
- canker, description, (32) 238.
- chlorosis, investigations, (37) 52.
- chlorosis, treatment, (27) 48; (28) 151, 447; (39) 749.
- disease, new, description, (31) 53.
- diseases in New Jersey, (34) 147.
- diseases in New South Wales, (34) 247.
- diseases, notes, (26) 55, 844; (32) 641; (33) 447, 741; (35) 249; (37) 51; (38) 50; (40) 53, 251.
- diseases, studies, (26) 449.
- diseases, treatment, (33) 349; (37) 51.
- fire blight, control, (32) 51; (39) 347.
- fire blight, notes, (29) 348, 848; (31) 749; (32) 844.
- flowers, polymorphism in, (28) 540.
- foliage, studies, (26) 407.
- fruit buds, development, (31) 335.
- fruit buds, winter injuries, (29) 41.
- fruit spots, notes, (34) 846.
- hold-over blight, studies, (26) 646.
- juice, physico-chemical constants of, (31) 427.
- juices, studies, (29) 711.
- leaf blight, investigations, (33) 347.
- leaf blister-mite—
 - alternate form, (37) 661.
 - notes, (27) 565; (28) 63; (32) 651; (35) 263; (40) 161.
 - remedies, (37) 54.
- leaf curling midge, notes, (30) 53.
- leaf scald or fruit spot, description, (26) 449.
- leaf spot, description and treatment, (30) 650.
- leaf spot, notes, (27) 750; (35) 454.
- leaf worm, studies, (36) 260.
- leaves, green and chlorotic, evaporation from, (30) 451.
- midge, *see* *Contarinia pyrivora*.
- Monilia blight, studies, (34) 351.
- moth borer, studies, (40) 853.
- Phytophthora rot, (36) 649.
- psylla—
 - notes, (26) 147; (27) 755; (28) 158, 752; (29) 355; (31) 548; (33) 58, 252; (34) 158, 752; (36) 854, 856; (40) 261.
 - relation to fire blight, (36) 351.
 - remedies, (28) 60; (29) 354; (33) 556; (34) 147; (36) 855; (39) 762; (40) 162.
 - spraying for, (39) 345.
 - susceptibility to spray mixtures, (31) 651.
- quince graft hybrid, description, (30) 740.
- root aphid, European, (37) 661.
- rust, new, description, (31) 150, 345.
- rust, notes, (29) 155; (30) 448; (32) 645; (35) 454.
- rust, studies, (37) 250.
- rust, treatment, (29) 50.

Pear—Continued.

- scab, notes, (34) 846; (36) 541; (38) 852, 853.
 scab, studies, (33) 148; (35) 351.
 scab, treatment, (27) 143; (36) 545.
 seedling, description, (32) 539.
 seeds, composition, (27) 11.
 seeds, oil from, (40) 511.
 Septoria leaf spot, investigations, (33) 347.
 slug in Chile, (40) 648.
 slug, notes, (26) 146, 863; (27) 53; (28) 563; (29) 158; (33) 58; (35) 253.
 slug, remedies, (28) 659.
 slug, studies, (27) 459.
 sooty blotch, notes, (35) 550.
 stigmomose, studies, (33) 349.
 stocks, blight-resistant, (36) 51; (39) 346.
 stocks for apple scions, (37) 40.
 stocks, quince for, (39) 447.
 stocks, tests, (39) 843.
 stop-back, relation to tarnished plant bug, (40) 455.
 sucker, notes, (34) 451.
 thrips—
 California, in Maryland, (33) 253.
 control in British Columbia, (37) 55, 462.
 distribution of pear blight by, (33) 149.
 life history and habits, (32) 850.
 life history and remedies, (27) 358.
 notes, (28) 158; (29) 252; (30) 656; (31) 548; (33) 252; (34) 752; (36) 856.
 remedies, (27) 54; (38) 259; (40) 163.
 studies, (27) 156; (37) 257; (40) 547.
 tree borer, sinuate, description, (35) 55.
 tree borer, sinuate, notes, (26) 61; (36) 856.
 tree slug, notes, (38) 459.
 tree trunks, introduction of solutions into, (36) 740.
 tree wood and bark, composition, (26) 407.
 trees, potassium cyanid inoculation, (39) 225, 762.
 weevil, oviposition, (39) 363.
 wine, preparation, (27) 412.
 Pearl disease and tuberculosis, (30) 582.
 Pearline as an insecticide, (36) 753.
 Pears—
 acidity, (32) 110; (37) 714.
 and apples, handbook, (26) 45.
 as affected by foreign pollen, (30) 739.
 as affected by moisture supply, (32) 638.
 Bartlett, keeping qualities, (34) 738.
 Bartlett, ripening, (36) 536.
 Bartlett, storage, (40) 838.
 belting, (27) 349.
 blight-proof, tests, (33) 338.
 blight resistant—see also Pear blight.
 from China, (34) 55.
 origin and development, (36) 641.
 blooming dates, (31) 140, 533.
 breeding, (36) 444.
 breeding experiments, (35) 743; (39) 542.
 breeding for blight resistance, (39) 346.
 buprestid beetle affecting, (26) 61.
 butter, parthenocarp in, (36) 331.
 Chinese wild, tests, (35) 447.
 cider, propagation, (34) 834.
 conservation without use of sugar, (38) 716.
 cooking qualities of different varieties, (32) 560.
 cost of production, (29) 439.
 critical months, (39) 811.
 cross pollination, (27) 598; (30) 643; (38) 345.
 crossbreeding experiments, (36) 742.
 crown gall affecting, (28) 447.
 culture, (27) 40; (34) 833.
 culture—
 experiments, (28) 236; (39) 347.
 in California, (39) 446.
 Mesa County, Colo., (37) 241.
 New York, (35) 836.
 Ontario, (37) 544.
 southern Texas, (32) 539.
 southern Utah, (30) 41.
 Uruguay, (32) 745.
 western Nebraska, (32) 233.
 diseased, plaster cast of, (31) 748.
 dried, analyses, (30) 861.
 dried, preparation and use, (29) 462.
 drying, (37) 114, 509.
 fall v. spring planting, (26) 238; (37) 743.
 fertile and self-sterile varieties, (40) 638.
 fertilizer experiments, (29) 539; (31) 534; (39) 347.
 fibro-vascular system, (27) 538; (29) 542.

Pears—Continued.

- from frost-killed pistils, (32) 841.
 frost injuries, (26) 749; (29) 547.
 frost rings on, (26) 244.
 frozen, as affected by rapid thawing, (32) 43.
 greening of wood, (29) 649.
 growing on grass land, (26) 639.
 growth as affected by meteorology, (29) 510.
 hardy and blight-resistant, breeding, (40) 445.
 harvesting and storage, (39) 844.
 host of *Archips argyrospila*, (27) 160.
 identification and classification, (36) 641.
 index to varieties, (26) 441.
 inheritance of russet skin in, (28) 734.
 inoculation experiments with brown rot fungus, (33) 247.
 insects affecting, (29) 756; (30) 753; (34) 833; (38) 460, 843.
 internal structure, (36) 41.
 irrigation experiments, (27) 743; (32) 638.
 keeping quality as affected by fertilizers, (27) 644; (29) 640.
 LeConte, somatic segregation of characters in, (32) 637.
 marketing cooperatively, (29) 392.
 methods of drying, (27) 146.
 new, descriptions, (29) 436, 838.
 nomenclature, Australian, (39) 844.
 nutrient injections in, (27) 48, 538.
 occurrence of glucosid in, (26) 327.
 of Germany, (33) 838.
 of North America, (36) 742.
 oriental, and their hybrids, (29) 541.
 oriental peach moth on, (39) 259; (40) 756.
 packing, (29) 838.
 parthenocarp in, (34) 226.
 parthenogenesis in, (29) 837.
 planting with dynamite, (35) 236.
 pollination, (27) 744; (31) 534; (34) 233, 341; (37) 40; (40) 638.
 precooling and storage investigations, (28) 829.
 preservation, (29) 312.
 preservation by pressure, (32) 416.
 preserved, valuation, (34) 256.
 pruning, (30) 739; (33) 837.
 pruning and training, (37) 344.
 reducing and nonreducing sugars in, (29) 503.
 ringing experiments, (32) 636.
 ripening in relation to humidity, (36) 741.
 seedless, notes, (30) 642; (34) 234.
 seedling, variations in, (30) 144.
 sod mulch v. clean culture, (33) 43.
 spray schedules, (39) 39, 140.
 spraying, (37) 744.
 spraying experiments, (27) 143, 439; (28) 652; (30) 641; (34) 147.
 spraying with lime arsenate, (40) 164.
 spring v. fall planting, (33) 439.
 stimulation of sap flow by nutrients, (27) 538.
 stocks for, (32) 337; (40) 444.
 susceptibility to bitter pit, (31) 244.
 temperatures injurious to, (27) 413, 439.
 tree census in Washington, (40) 340.
 varieties, (30) 739; (33) 534; (37) 241; (38) 41; (39) 445, 844.
 varieties—
 for Australia, (29) 340; (39) 844.
 Missouri, (40) 341.
 New Jersey, (33) 439.
 Ohio, (37) 241.
 Pacific Northwest, (29) 745.
 western Washington, (33) 44.
 in Oklahoma, (27) 241.
 resistant to disease, (29) 246.
 vegetable, notes, (29) 461.
 winter injury, (35) 143; (40) 835.
 wound stimulation and closure in, (26) 826.
 Peas—
 Alaska, amino nitrogen in, (33) 222.
 Alaska, breeding experiments, (40) 740.
 alcoholic fermentation in, (26) 731.
 analyses, (32) 171; (34) 469; (40) 557.
 and cereals as hay mixture, (39) 333.
 and oats—
 as hay crop, (39) 336; (40) 736.
 as silage crop, (40) 731.
 for hay or silage, (32) 430.
 seedling experiments, (37) 640.
 yields, (40) 735.
 aphids affecting, (28) 556; (31) 452.

Peas—Continued.

as affected by—

- disinfectants, (26) 820
- ether, (26) 127.
- niter cake superphosphate, (40) 515.
- pod position, (34) 134.
- poisons, (39) 224.
- as green manure, (26) 534.
- green manure under dry-land conditions, (39) 131.
- hay and silage crop, (39) 737.
- hog pasture, (39) 375.
- orchard cover crop, (34) 437.
- assimilation of nitrogen by, (26) 32.
- assimilation of organic phosphates by, (29) 423.
- bacteria as affected by acidity, (39) 722.
- bacterial stem blight of, (35) 847.
- betains in, (27) 203.
- breeding, (28) 435.
- breeding and improvement in Sweden, (39) 833.
- breeding experiments, (28) 331; (29) 433; (33) 331.
- bushel weights, (37) 889.

Canada—

- and oats for forage, (33) 225.
- and oats, for silage, (28) 734.
- culture, (27) 32.
- field, culture, (31) 265.
- field, culture experiments, (28) 735.
- field, fertilizer experiments, (30) 820.
- field, varieties, (33) 830.
- canned, analyses, (31) 461.
- canned, ash content, (33) 260.
- cannery refuse, feeding value, (36) 167.
- canning, (39) 165.
- canning, improvement in Wisconsin, (34) 341.
- composition as affected by companion crop, (26) 617.
- cost of production, (29) 690.
- culture, (26) 539; (34) 630.
- culture—

- experiments, (27) 31, 335; (28) 633; (30) 133; (32) 529, 530; (33) 830; (35) 141, 341; (36) 32; (37) 30, 529, 825; (38) 132, 133; (39) 334.
- in Antigua, (36) 735.
- Philippines, (39) 444.
- Rhodesia, (27) 32, 637.
- Washington, (37) 96.
- on moor soils, (39) 438.
- under dry farming, (30) 435; (36) 528, 529.
- under irrigation, (34) 528.
- description and agricultural value, (36) 635.
- device, for sorting, (36) 635.
- dietary properties, (40) 762.
- dried, arsenic in, (27) 269.
- drying, (37) 509.
- effect on companion crop of barley, (32) 515.
- effect on soil moisture, (34) 17.
- electroculture experiments, (30) 788; (40) 428.
- fertilizer experiments, (26) 527, 622, 631, 818, 835; (27) 32, 628; (28) 734, 816; (29) 22; (30) 220; (31) 328, 820; (32) 630; (34) 24, 518, 822; (35) 425; (38) 820.
- fertilizing value, (32) 216.

field—

- and oats, seeding experiments, (31) 36.
- as cover crop, (32) 332.
- forage crop, (34) 140; (38) 827.
- green manure, (28) 339; (32) 539; (35) 438; (39) 31.
- hog pasture, (38) 470; (39) 479; (40) 75.
- silage crop, (39) 134.
- winter green manure, (39) 434.
- Bacillus radiclecola* of, (33) 329.
- chemical study of varieties, (39) 838.
- composition at different stages, (39) 836.
- critical period of growing season, (39) 811.
- culture, (26) 830; (35) (33); (37) 337.
- field, culture—
- at high altitudes, (39) 810.
- experiments, (28) 532; (29) 226, 735; (32) 132, 526, 528, 529; (35) 827; (37) 30, 227; (38) 333, 634; (39) 124, 227, 735; (40) 735.
- for hay and seed, (37) 436.
- for winter forage, (38) 735.
- in eastern Oregon, (32) 730.
- New Mexico, (40) 18.
- southern Texas, (32) 332.
- western Nebraska, (32) 224.
- under dry farming, (31) 429; (34) 734.

Peas—Continued.

field—

- depth of sowing tests, (27) 835.
- effect of position in pod, (40) 521.
- feeding value, (40) 771.
- fertilizer experiments, (40) 735.
- forage production, (39) 838.
- grazing off, (39) 229.
- growing with grain, (40) 822.
- heredity of violet color in (31) 333.
- hogging-off, (37) 66, 68.
- irrigation experiments, (37) 640.
- liming experiments, (39) 221; (40) 126.
- notes, (35) 340.
- pedigreed, in Wisconsin, (40) 624.
- rate of seeding test, (34) 734.
- relation between size of seed and yield, (26) 434.
- seeding experiments, (37) 30; (39) 333; (40) 227.
- selection experiments, (37) 32.
- tests in Montserrat, (40) 228.
- utilization of sugar by, (36) 125.
- varieties, (27) 32, 334, 736; (28) 532, 827; (29) 32, 426; (32) 37, 730, 731; (33) 34; (34) 228, 735; (35) 829; (36) 36; (37) 29, 30, 32, 33, 135, 228, 337, 530, 640; (38) 131, 431, 634.
- varieties for moor soil, (39) 438.
- variety tests, (39) 128, 227, 229, 333, 334, 435, 738, 838; (40) 730, 731, 732, 735.
- water requirements, (29) 826; (32) 127.
- yields, (27) 734; (39) 336; (40) 731.
- forcing by electricity, (26) 136.
- gametic reduplication in, (30) 433.
- garden—
- and field, origin, (32) 327.
- new bacterial disease of, (29) 245.
- nodule bacteria of, (32) 33.
- protein utilization, (26) 564.
- selection experiments, (38) 635.
- variations in, (30) 739.
- varieties, (30) 640; (31) 336; (34) 833.
- variety tests, (33) 430.
- germinating, starch digestion in, (28) 127.
- germination as affected by—
- depth of planting, (36) 437.
- fertilizers, (29) 327.
- mineral matter, (39) 526.
- germination—
- in mercury vapor light, (30) 827.
- of, (35) 431.
- tests, (29) 223; (30) 236.
- tests in hydrogen peroxid, (27) 201.
- grass, culture experiments, (27) 735.
- grass, varieties, (27) 32.
- green, analyses, (27) 170.
- green, as meat substitute, (38) 166.
- ground, analyses, (35) 562.
- ground, digestibility, (28) 464.
- growth as affected by—
- alkali salts, (34) 125.
- fertilizer salts, (29) 329.
- glycerin, (31) 522.
- radioactivity, (28) 731.
- stimulants, (35) 434.
- growth in relation to temperature, (35) 432.
- harvesting and storage, (38) 41.
- home drying, (38) 41.
- hybridization experiments, (29) 433; (30) 329, 330; (32) 326.
- improvement, (28) 331.
- improvement in Canada, (37) 831.
- inheritance—
- and variation in, (38) 822.
- correlation, and variation in, (28) 331.
- from different parts, (36) 27.
- in, (27) 740; (30) 331.
- of flowering time in, (28) 531; (35) 329.
- inoculation experiments, (26) 233; (28) 426.
- insects affecting, (26) 857.
- irrigation experiments, (28) 230.
- Jerusalem, varieties, (50) 525.
- legumins in, (40) 607.
- liming experiments, (36) 27.
- limitation studies, (36) 839; (39) 747.
- mulching v. clean culture, (33) 534.
- nitrogen metabolism, (37) 24.
- nodule bacteria, (39) 338.
- of Burma, names and descriptions, (33) 229.
- oil content, (27) 716.

Peas—Continued.

- partridge, as green manure, (32) 423.
- partridge field, analyses, (28) 463.
- phosphoric acid content, (40) 508.
- plant nutrients removed by, (29) 837.
- precipitin test for, (31) 733.
- preparation and use, (32) 253.
- preservation, (29) 312.
- preservation by pressure, (32) 416.
- production in Spain, (28) 736.
- ratio of tops to roots, (31) 628, 733.
- relation to climate, (28) 27.
- respiration as affected by electricity, (31) 33.
- rogues in, (34) 41.
- root development with other crops, (26) 129.
- root growth at various temperatures, (36) 28.
- Rounceval, culture experiments, (35) 135.
- seed color variation in, (37) 334.
- seed testing, (38) 41.
- seed treatment, (40) 443.
- seeding experiments under irrigation, (39) 133.
- selection and breeding, (31) 829.
- selection experiments, (36) 735.
- split, industry in Tunis, (39) 208.
- sprouting capacity in relation to antiscorbutic value, (39) 470.
- stock or field, description, (30) 828.
- Sturt, hybridization experiments, (26) 834.
- subsoiling experiments, (37) 732.
- Tangier, culture experiments, (30) 632; (32) 132; (33) 33.
- toxic root secretions of, (35) 636.
- transformation of nitrogen by (29) 133.
- varieties, (26) 631, 632, 835; (27) 32, 334, 637; (29) 222, 530; (31) 829; (32) 431, 630; (33) 33; (35) 141; (36) 32, 735; (37) 825; (38) 33.
- varieties and hybrids of, (33) 525.
- varieties, new Swedish, (39) 833.
- variety tests, (40) 434.
- water requirements, (26) 129; (34) 720; (38) 227.
- water requirements in India, (27) 429.
- wire frames for, (33) 891.
- yield of plump v. shrunken seed, (27) 734.
- yields, (28) 533.
- yields in Australia, (38) 133.

Peasants, Italian, in Sicily, standard of living, (26) 358.

Peat—see also Moor soils.

- acidity and alkalinity of, (30) 715.
- agricultural value, (30) 588.
- analyses, (27) 327; (29) 119; (32) 520; (34) 521; (36) 27.
- and parent material, composition, (39) 425.
- and peat moors, utilization, (34) 618.
- as fertilizer or fertilizer filler, (34) 332.
- as source of ammonia, (27) 623.
- as source of organic ammoniates, (37) 815.
- availability of nitrogen in, (26) 523; (28) 724, 725; (38) 423.
- bacterial treatment, (30) 721.
- bacterized, (40) 222.
- bacterized and heated, comparison, (36) 219.
- bacterized, fertilizing value, (31) 821, 822, 826; (33) 124; (35) 324, 430, 628; (36) 219, 517, 726; (37) 426, 629, 719, 814; (38) 120, 328; (39) 116, 530.
- beds, denitrification in, (38) 514.
- bogs, converting into meadows, (37) 826.
- bogs in Michigan, (28) 521.
- bogs, utilization, (26) 323.
- burned, analyses, (35) 128.
- decomposition of cellulose in, (31) 25.
- deposits of United States, (39) 425.
- deposits of Vermont, (28) 422.
- digestibility and productive value, (37) 865.
- dust, storage of apples in, (29) 641.
- effect on nitrogen assimilation in plants, (26) 319.
- extract, effect on nitrification, (26) 721.
- fertilizing value, (26) 323; (27) 325; (28) 817, 820; (29) 518; (39) 726.
- fertilizing value, judging, (37) 216.
- filler, analyses, (26) 715.
- fuel, preparation and use, (31) 123.
- hog, descriptions of bones, (28) 767.
- humification, (31) 120.
- industrial use, (33) 488.
- industry in Canada, (36) 322.
- industry in United States, (31) 122; (36) 624.
- industry, notes, (34) 822.

Peat—Continued.

- litter, absorptive power, (33) 722, 817, 818.
- litter as manure absorbent, (34) 517.
- litter machines, descriptions and tests, (27) 727.
- litter, treatise, (34) 624.
- machinery, tests, (34) 589.
- moistening, (33) 322.
- molasses, digestibility, (30) 568.
- moors and water powers, economic importance (32) 820.
- moss as feeding stuff, (32) 259.
- moss litter manure, notes, (26) 527.
- moss, use as litter, (31) 30, 272.
- mulch, methods of analysis, (31) 806.
- nitrogen as affected by heat, (39) 617.
- nitrogen, formation of nitrates from (29) 624.
- nucleic acid derivatives in, (38) 202.
- of Germany, studies, (30) 715.
- organisms that liquify agar, (35) 227.
- production—
 - and use in 1913, (33) 25.
 - and use in United States, (38) 820; (40) 221.
 - in United States, (34) 332.
- resources of Wisconsin, (34) 786.
- soils—
 - adsorptive power, (34) 515.
 - analyses, (32) 212.
 - as affected by lime, (29) 823.
 - deposits in Virginia coastal plain, (29) 513.
 - drainage, (37) 135; (38) 591, 690.
 - fertility, (28) 733.
 - fertilizer experiments, (39) 428, 729.
 - fertilizers for, (37) 720; (39) 813.
 - for cranberries, (33) 736.
 - improvement, (33) 416; (36) 119.
 - in Minnesota and Wisconsin, (34) 618.
 - lime and phosphoric acid content, determination, (39) 504.
 - management, (37) 134.
 - microorganisms of, (38) 420.
 - nitrification in, (33) 422.
 - nitrogenous fertilizers for, (39) 423.
 - notes, (27) 617.
 - of German East Africa, (37) 317.
 - Massachusetts, (37) 810.
 - Minnesota, analyses, (35) 625.
 - Ohio, (37) 212.
 - Picardy, (27) 619; (30) 514.
 - reclamation and improvement, (29) 890.
 - rotation and manurial experiments on, (33) 227.
 - studies, (39) 10, 11.
 - treatise, (34) 618.
 - treatment, (30) 119.
 - Tunis phosphate for, (29) 519.
 - unproductiveness of, (30) 518.
 - use of manganese sulphate on, (39) 729.
 - vegetation as indicator of quality, (40) 718.
 - water movement in, (33) 322.
- sphagnum, investigations, (28) 518.
- straw, methods of analysis, (31) 806.
- treatment with aerobic soil bacteria, (30) 399.
- use, (27) 24; (28) 521.
- use as fertilizer filler, (35) 24.
- utilization in Italy, (31) 321; (32) 820.
- water movement in, (33) 322.

Peaty swamp lands, improvement, (28) 32.

Pecan—

- catkins, disease of, (37) 844.
- dieback, studies, (35) 850; (37) 652.
- diseases—
 - and insects in Georgia, (35) 461.
 - control, (39) 459.
 - descriptions, (30) 452.
 - notes, (37) 756; (39) 459, 553.
 - treatment, (31) 245.
- industry in United States, (39) 647.
- kernel spot, transmission, (39) 763.
- leaf blotch, notes, (26) 56.
- leaf case-bearer, studies, (38) 656.
- oil, digestibility, (38) 668.
- rosette in relation to soil deficiencies, (40) 544.
- rosette, investigations, (32) 241.
- rust, studies, (27) 547.
- twig girdler, life history, (35) 661.

Pecans—

- analyses, (26) 337.
- budding and grafting, (36) 743.
- crown gall affecting, (28) 447.
- culture, (28) 840; (34) 151, 740; (36) 139.

Pecans—Continued.

- culture
 - experiments, (28) 236.
 - in Florida, (29) 542.
 - Georgia, (33) 440.
 - Maryland, (37) 345; (40) 150.
 - North Carolina, (26) 337; (39) 344.
 - southern Texas, (32) 539.
 - southern Utah, (30) 41.
 - Texas, (36) 743.
 - distribution of nitrogen in, (36) 269.
 - insects affecting, (28) 249; (38) 157, 256, 762; (39) 461, 557; (40) 56, 259.
 - monograph, (27) 645.
 - new, descriptions, (29) 436.
 - parent and propagated trees, (35) 145.
 - Phylloxera galls affecting, (32) 553.
 - self-sterility in, (35) 36, 41; (36) 344.
 - shelled, industry in Texas, (29) 61.
 - spraying, (33) 439.
 - storage, (34) 151.
 - studies, (40) 540.
 - top-working, (30) 843; (35) 344.
 - top-working on hickory, (34) 151; (35) 745.
 - value and adaptability in the South, (26) 744.
 - varieties, (34) 151; (37) 44.
 - winterkilling, sun scald, or sour sap, (37) 755.
 - wood rot, (40) 158.
- Pecari angulatus bangsi* n.subsp., description, (37) 757.
- Pecatonica* River, flood control, (37) 186.
- Pecos* River, profile survey, (36) 583.
- Pectase, action of, (35) 25.
- Pectic substances of plants, (37) 309.
- Pectin—
- bodies, constitution, (40) 202.
 - determination in spices, (40) 115.
 - determination in sugar residues, (36) 415.
 - methyl alcohol, studies, (40) 204.
 - preparation, (37) 715; (39) 315, 609.
 - studies, (40) 804.
 - test in jelly making, (40) 558.
- Pectinase in alfalfa, (32) 411.
- Pectinophora gossypiella*, see Cotton bollworm, pink.
- Pectins—
- of aucuba and sweet orange, (29) 608.
 - use in food products, (34) 167.
- Pedicularis vulgaris*, haustoria of, (39) 358.
- Pediculi*, remedies, (31) 58, 351.
- Pediculidae*, notes, (26) 655.
- Pediculoides ventricosus*—
- notes, (27) 561, 564, 565; (31) 656.
 - parasitic on fig moth, (26) 248.
- Pediculopsis graminum*—
- notes, (28) 854.
- relation to pink bud rot, (28) 750.
- Pediculus*—see also Lice.
- capitis, relation to leprosy, (27) 853.
 - corporis, relation to trench fever, (39) 658.
 - humanis corporis—
 - biology, (35) 460.
 - life history and remedies, (38) 765.
 - remedies, (35) 854; (39) 558. - spp., studies, (37) 850; (38) 159.
 - spp., transmission of poliomyelitis by, (28) 753.
 - spp., transmission of typhus fever by, (26) 759.
 - vestimenti, see *Pediculus humanus corporis*.
- Pedigrees*, uniform system for, (29) 665.
- Pedogenesis*, studies (26) 147.
- Pedology*, ancient ideas concerning, (30) 212.
- Peganum harmala*, density of cell sap, (32) 35.
- Pegmatite* granite, potash from, (27) 127.
- Pegomyia*—
- affinis, notes, (40) 758.
 - brassicae, see Cabbage maggot.
 - cepetorum, see Onion maggot.
 - chilensis, notes, (40) 648.
 - fusciceps, see *Phorbia fusciceps*.
 - hyoscyami—
 - breeding experiments, (36) 653.
 - life history, (26) 452.
 - notes, (35) 466; (36) 57.
 - studies, (32) 351. - planipalpis, studies, (27) 553.
 - ruficeps, notes, (26) 250.
 - spp., breeding experiments, (36) 658.
 - spp., mining dock leaves, (40) 859.
 - spp., notes, (29) 454.
 - vicina in North America, (35) 759.
 - vicina, notes, (28) 752.
- Pelagophycus porra*, analyses, (27) 421.
- Pelargonin*, studies, (34) 709.
- Pelargonium*—
- bacterial disease of (32) 53.
 - canker, notes, (34) 56.
 - disease, new, (38) 152.
 - poisoning by certain elements, (38) 628.
 - scarlet, coloring matter of, (34) 709.
- Pelargoniums*—
- breeding experiments, (27) 741.
 - coloring matter, (27) 228.
 - notes, (29) 341.
- Pelatachina pellucida*, notes, (37) 763.
- Pellagra*—
- alkali reserve of blood in, (39) 671.
 - and the vitamin hypothesis, (40) 70.
 - cause and prevention, (32) 255; (34) 764.
 - central nervous system in, (35) 560.
 - colloidal silica theory, (36) 763.
 - dietary treatment, (35) 666.
 - etiology, (32) 67; (33) 662.
 - experimental, in dogs, (36) 764.
 - human-like, in dogs, (38) 366.
 - in Italy, notes, (27) 568.
 - in Province of Rome, (31) 859.
 - nature and prevention, (39) 70.
 - photodynamic theory of, (26) 871.
 - prevention, (34) 259, 764; (35) 472.
 - problem in Illinois, (28) 560.
 - producing diets, (39) 266, 665, 666; (40) 69.
 - relation to—
 - corn, (26) 486; (29) 175.
 - corn meal, (29) 768. - deficiencies in diet, (30) 764.
 - diet, (26) 263; (33) 464, 565; (34) 258, 259, 764; (35) 560, 767; (36) 763; (38) 268, 568.
 - insects, (27) 156; (28) 855; (33) 555.
 - location of domicile, (33) 565.
 - sand-flies, (26) 556; (29) 357; (31) 455.
 - sewage disposal, (31) 893; (37) 694.
 - Simulium*, (31) 452.
 - stable flies, (29) 756.
- review of investigations, (34) 463; (36) 363.
- similarity to zeism, (31) 464.
- studies, (30) 865; (31) 858; (33) 167; (35) 666; (36) 464, 466; (40) 69, 363, 869.
- summary and digest of data, (36) 161.
- transmissibility, (36) 363.
- transmission experiments, (36) 764.
- treatise, (36) 763.
- treatment, (32) 255, 564.
- Pelletierine tannate* as a vermifuge, (38) 884.
- Pellicularia*—
- disease of coffee, (40) 48.
 - koleroga, notes, (32) 645.
 - koleroga on coffee, studies, (31) 450.
 - koleroga, studies, (33) 549.
- Peloria* in flowers, (34) 823.
- Peltophorum africanum*, analyses and digestibility, (27) 871; (32) 167.
- Pempheres affinis*, notes, (40) 553.
- Pemphigidae* of Japan, (38) 857.
- Pemphiginae* affecting *Populus* in Colorado, (31) 351.
- Pemphigus*—
- acerifolii, notes, (35) 54.
 - betæ, see Beet aphid and Sugar beet root louse.
 - bursarius, notes, (27) 552.
 - fraxini-dipetalae on olive, (38) 157.
 - gravicornis n.sp., description, (29) 654.
 - imbricator, notes, (26) 147.
 - lactucarius, notes, (28) 655.
 - populi-transversus, studies, (40) 60.
 - spp., notes, (27) 257.
 - tessellata (acerifolii), notes, (26) 753.
- Pemphredon*, nearctic species, (38) 660.
- Penguin guano* from Falkland Islands, (31) 622.
- Penicillaria*, culture experiments, (33) 33.
- Penicillic acid*, formation, (29) 7.
- Penicillium*—
- ammonifying power, (32) 29.
 - avellaneum n.sp., description, (35) 148.
 - camembertii, secretion of diastase by, (36) 328.
 - casei, notes, (26) 479.
 - chrysogenum as affecting butter, (39) 785.
 - chrysogenum, proteolytic activity, (40) 721.
 - conidium production in, (32) 442.
 - crustaceum, notes, (28) 562.
 - crustaceum, resistance to toxic substances, (29) 734.
 - crustaceum, utilization of phytin by, (30) 805.

Penicillium—Continued.

- digitatum, relation to temperature, (33) 545.
- expansum, growth in plant decoctions, (37) 728
- expansum on plums, (34) 445.
- expansum, temperature relations, (36) 649.
- formation of coremia in, (28) 745.
- glaucum—
 - as affected by chemicals, (28) 444.
 - behavior in iron solutions, (27) 527.
 - behavior with acetic acid, (26) 203.
 - cleavage of gluten by, (31) 711.
 - decomposition of fat by, (30) 311.
 - effect on amino acids, (27) 526.
 - factors affecting development, (30) 241.
 - fixation of atmospheric nitrogen by, (26) 123.
 - fixation of nitrogen by, (36) 632.
 - in Stilton cheese, (28) 879.
 - in tamari-koji, (29) 161.
 - isolation from cheese, (26) 479.
 - mutation in, (30) 630; (31) 225.
 - nitrogen fixation by, (31) 711, 721.
 - occurrence in sugar, (26) 505.
 - organic constituents of, (30) 226.
 - penetration of egg shells by, (29) 765.
 - products of, (29) 817.
 - relation to iodine compounds, (29) 133.
 - retarding action of certain substances on, (28) 629.
 - studies, (26) 749.
- gratioti n.sp., studies, (29) 844.
- italicum, notes, (28) 241.
- luteum purpureogenum group, (34) 51.
- maculans n.sp. on rubber, (32) 347.
- monograph, (31) 327.
- pfefferianum, description, (38) 448.
- pinophilum, excretion of cytase by, (28) 803.
- puberulum, studies, (27) 729.
- roqueforti, effect on milk fat, (31) 107.
- roqueforti, notes, (30) 312.
- roseum, relation to citrus gummosis, (31) 449.
- sp., ammonia production by, (35) 513; (36) 221.
- sp., effect on corn meal, (28) 663.
- sp. on cranberry, (39) 749.
- sp. on sweet potato, (39) 854; (40) 347.
- sp., treatment, (33) 149.
- spp., cleavage of methyl glucosid by, (30) 11.
- spp., formation and regulation of enzymes by, (31) 730.
- spp., formation of tannase by, (27) 408; (29) 132.
- spp., growth in presence of salt, (32) 176.
- spp., nitrogen fixation by, (37) 129.
- spp., notes, (27) 350; (32) 343.
- spp. on citrus, (34) 446; (35) 748; (39) 56.
- spp. on orchard fruits, (37) 550.
- spp. relation to apple rot, (33) 348.
- spp. studies, (29) 7.
- spp. toxicity to bees, (38) 564.
- stoloniferum, studies, (27) 802.
- variable, self poisoning in, (29) 529.

Pennisetum—

- benthani, composition, (28) 873.
- cenchrroides, notes, (30) 229.
- ciliare, analyses, (36) 334.
- ciliare, analyses and digestibility, (32) 167.
- ciliare, studies, (38) 66.
- macrostachyum, notes, (26) 362.
- purpureum—
 - composition and culture, (36) 230.
 - notes, (30) 527.
 - tests, (38) 828.

spicatum—

- analyses and digestibility, (28) 464.
- description, (29) 59.
- notes, (27) 32.
- typhoideum, analyses, (38) 368.
- typhoideum, culture experiments, (31) 733.

Pennsylvania—

- College, notes, (26) 494, 695; (27) 398, 600, 699, 799; (28) 94, 300, 397, 900; (29) 398; (30) 300, 699, 900; (31) 198, 399, 696, 798; (32) 198, 398, 600; (33) 198, 700; (34) 497; (35) 97, 699; (36) 100, 197, 500, 696; (37) 98, 197, 499, 898; (38) 98, 800; (39) 97, 198, 600, 698; (40) 199, 498, 698, 799.
- Institute of Animal Nutrition, notes, (26) 97, (27) 199; (31) 497; (32) 798; (33) 900; (36) 100; (37) 797; (39) 198, 300.
- Rural Progress Association, report, (31) 788.
- Station, financial statement, (28) 194.

Pennsylvania—Continued.

- Station, notes, (26) 494, 695, 899; (27) 398, 600, 699, 799; (28) 94, 300, 397; (29) 398; (30) 300, 699; (31) 198, 399, 798; (32) 198; (33) 198, 700; (34) 497, 900; (35) 97, 699; (36) 100, 197; (37) 98, 197, 499, 898; (38) 198, 800; (39) 97, 198, 600; (40) 199, 698.
- Station, report, (34) 197; (35) 595; (38) 95.
- Station, report of director, (28) 194.
- Pentane, sterilization of soils by, (32) 816.
- Pentaphis (Tychea) trivialis, notes, (28) 655.
- Pentarthron—
 - carpocapsae, biology, (31) 62.
 - carpocapsae, notes, (26) 557.
 - minutum, notes, (27) 56.
 - minutum, parasitic on bud moth, (34) 250.
 - minutum, parasitic on pear slug, (26) 863.
 - (Oophthora) semblidis, artificial breeding, (30) 756.
 - retorridum, notes, (28) 160.
- Pentastomum taenioides, dissemination and action, (27) 479.
- Pentatoma—
 - juniperina, notes, (30) 657.
 - ligata affecting Sudan grass, (33) 747.
- Pentilia sp., notes, (29) 261.
- Pentosan content of germinating seeds, (29) 525.
- Pentosans—
 - as source of energy in animal body, (30) 465; (31) 763.
 - chemistry, biology, and occurrence, (30) 10.
 - determination, (33) 713; (36) 807; (40) 114.
 - determination in flour, (39) 205.
 - determination in wheat, (28) 836.
 - in corn, (28) 312.
 - feeding stuffs, (34) 168.
 - germinating bean seeds, (27) 730.
 - humus, (28) 204.
 - plants, studies, (27) 427.
- Pentose, formation in wine, (31) 316.
- Pentoses—
 - behavior in fermenting mixtures, (27) 502.
 - destruction in alcoholic fermentation, (36) 609.
 - determination, (37) 617.
 - determination in—
 - beet molasses, (38) 113.
 - grapes and wines, (29) 205.
 - presence of other sugars, (32) 113.
 - free, in plant extracts, (33) 712.
 - utilization by Glomerella cingulata, (34) 351.
- Pentosid, guanin, from molasses residue, (26) 116.
- Peonies—
 - American Botrytis blight of, (29) 650.
 - Botrytis disease, (40) 844.
 - classification, (26) 542.
 - coloring matter of, (34) 710.
 - culture, (35) 745.
 - diseases, notes, (33) 56.
 - herbaceous, culture in Alaska, (29) 743.
 - nomenclature, (39) 833.
 - notes, (29) 194; (39) 449.
 - treatise, (37) 145.
 - varieties, (35) 745.
- Peonin, studies, (34) 710.
- People's high schools in Denmark, (30) 93.
- Pepino, tests, (27) 741.
- Pepper—
 - adulteration, (28) 461.
 - adulteration, detection, (26) 805.
 - analyses, (30) 712.
 - analyses and standards, (37) 112.
 - anthracnose, notes, (39) 146; (40) 48.
 - bacterial diseases, notes, (37) 652.
 - black, effect on microorganisms, (35) 557.
 - black spot, notes, (37) 841.
 - blight, notes, (32) 641.
 - breeding and environmental studies, (39) 746.
 - breeding experiments, (28) 539, 739; (29) 434; (32) 536, 635; (34) 144; (36) 838.
 - canker or rot, notes, (27) 849.
 - Cercospora spots, notes, (35) 844.
 - chili, disease of, (31) 745.
 - color inheritance in, (38) 443.
 - cress seeds, germinability, (37) 26, 431; (38) 729.
 - culture, (33) 297.
 - culture—
 - and diseases in Dutch East Indies, (35) 349; (37) 248, 646.

Pepper—Continued.

- culture—continued.
 - experiments, (31) 336; (37) 742.
 - in Burma, (29) 736.
 - in India, (39) 445.
 - in Mexico, (29) 41.
- destruction by black scale, (26) 555.
- disease, description, (26) 448.
- disease, investigations, (38) 646.
- diseases in India, (38) 547.
- diseases, studies, (39) 455.
- fertilizer experiments, (31) 336; (37) 215, 343, 742.
- fruit disease, notes, (34) 442.
- fruit rot, notes, (36) 48; (38) 250.
- fungus disease affecting, (31) 542.
- greenhouse, carbon dioxide for, (39) 38.
- heredity in, (27) 740; (28) 739; (30) 342.
- host plant of fruit fly, (26) 758.
- hybridization experiments, (29) 434; (30) 533.
- improvement, (38) 641.
- industry in Banca, Dutch East Indies, (35) 835.
- insects affecting, in Banca, Dutch East Indies, (35) 835.
- irrigation experiments, (29) 638.
- mosaic disease, characteristics, (31) 345.
- mosaic disease, notes, (36) 451.
- nematodes affecting, (28) 746.
- paprika, culture, (30) 343.
- parthenogenesis in, (29) 837.
- red, composition, (29) 263.
- response to carbon dioxide, (40) 820.
- shading experiments, (39) 748.
- Spanish, canning and use, (33) 297.
- tree caterpillar, larval habit, (31) 752.
- tree caterpillar, notes, (28) 557; (36) 654.
- tree, crown gall affecting, (28) 447.
- value in the diet, (29) 664.
- weevil, notes, (28) 657.
- white, examination, (29) 463.
- wilt, notes, (36) 449; (38) 351.
- wilt, studies, (40) 157.

Peppermint—

- culture, (34) 151.
- culture experiments, (29) 331.
- culture in Indiana, (38) 246.
- essential oil of, (26) 504.
- extract, analyses, (35) 663.
- extract, methods of analysis, (29) 798.
- oil, factors affecting composition, (36) 344.
- oil industry in Japan, (30) 710, 711.
- rust, notes, (33) 848.

Pepsin—

- and chymosin, identity, (26) 107.
- and trypsin, reaction between, (31) 609.
- as affected by organic acids, (36) 763.
- as rennet substitute, (34) 574; (37) 576; (39) 884; (40) 80.
- digestion of casein by, (28) 407.
- in eggs, (28) 64.
- protein cleavage by, (36) 108.
- separation from rennin, (26) 803.
- studies, (26) 265; (40) 504.
- use in cheese making, (37) 175, 373, 778, 875.

Peptic—

- activity, determination, (31) 504.
- proteolysis as affected by heat, (31) 107, 860.

Peptid, new, isolation, (40) 611.

Peptides—

- detection, (28) 503.
- determination in proteolysis, bloods, and urine, (31) 212.
- effect on cobra venom hemolysis, (36) 276.

Peptone—

- action as affected by distribution in soils, (35) 518.
- anaphylatoxin, studies, (37) 581.
- assimilation by plants, (26) 32.
- decomposition by Streptothrix, (27) 620.

Peptones—

- activation by lecithin, (35) 881.
- determination in proteolysis, bloods, and urine, (31) 212.
- effect on—
 - action of alcohol on plant cells, (34) 333.
 - baking quality of flour, (26) 356; (30) 555.
 - determination of sugar, (29) 613, 716.
 - oxidation of sulphur in soils, (30) 222.
 - secretion of diastase by fungi, (31) 13.
 - toxicity of inorganic salts, (31) 730.
 - toxicity of nitrates, (30) 227.

Peptones—Continued.

- in soils, (34) 325.
- nitrification in soils, (26) 722.
- rôle in glycogen formation, (31) 763.
- synthesis by means of enzymes, (34) 708.
- transformation in intestinal canal, (31) 463.
- Peranabrus scabricollis, notes, (37) 54.
- Perchlorates, determination in—
 - Chile saltpeter, (37) 111.
 - presence of chlorides and chlorates, (26) 511.
- Perchloric acid—
 - preparation from perchlorates, (40) 13.
 - recovery from potassium residues, (38) 312.
- Perclista quercus n.sp., description, (30) 60.
- Percolation—
 - lateral, in soils, (31) 216.
 - losses of moisture and plant food by, (33) 619
- Percrystallization, notes, (37) 409.
- Perdita, notes, (39) 566.
- Perdix perdix, feeding habits, (30) 454.
- Peregrinus maidis—
 - as corn pest, (31) 249.
 - notes, (27) 657.
- Perennials—
 - culture, treatise, (27) 645.
 - for Illinois, (28) 840.
 - hardy, treatise, (29) 840; (35) 345.
 - herbaceous, rest period in, (33) 223.
 - propagation, (28) 840.
 - varieties for Illinois, (34) 45.
- Perezia—
 - legri n.sp., description, (40) 264.
 - mesnili n.sp., description, (40) 65.
- Perfume plants, treatise, (36) 142.
- Perhydridase, studies, (26) 310.
- Perhydrol—
 - as a mouth wash in milk testing, (26) 712.
 - nature and use, (26) 580.
- Pericarditis, traumatic, paper on, (27) 576.
- Periconia gildeniana, notes, (38) 51.
- Pericystis alvei, notes, (28) 562.
- Peridental membrane, relation to mastication, (26) 360.
- Perideraerus granellus, notes, (33) 658.
- Peridermium—
 - aciculum on Pinus resinosa, (36) 454.
 - balsameum, occurrence in Washington, (36) 651.
 - californicum n.sp., description, (31) 845.
 - cedri, notes, (27) 654; (32) 346.
 - cerebrum on jack pines, (33) 351.
 - cerebrum, studies, (40) 349.
 - comptoniae n.comb., notes, (31) 348.
 - comptoniae, notes, (31) 641.
 - filamentosum, notes, (39) 859.
 - filamentosum on yellow pine seedlings, (34) 649.
 - fusiforme and P. cerebrum, notes, (31) 445; (39) 859.
 - guatemalense n.sp., description, (31) 845.
 - harknessii—
 - and Cronartium quercuum, association, (34) 849; (36) 454, 746.
 - infection experiments, (30) 745.
 - notes, (39) 859.
 - inconspicuum n.sp., description, (27) 746.
 - laricis, description, (29) 554.
 - montanum and P. aciculum, identity, (35) 851.
 - n.spp., descriptions, (39) 30.
 - occidentale n.sp., studies, (39) 859.
 - peckii, notes, (27) 648.
 - pini, notes, (28) 750.
 - pini, studies, (31) 153.
 - pyriforme—
 - and Cronartium comandrae, identity, (34) 539.
 - new hosts, (27) 649; (34) 354.
 - notes, (34) 242; (39) 859.
 - ribicola, description, (37) 354.
 - sp., notes, (30) 647.
 - spp., alternate forms, (37) 844, 845.
 - spp., infection experiments, (30) 537.
 - spp., inoculation experiments, (32) 647.
 - spp., notes, (26) 57; (27) 252; (29) 451, 547; (31) 348; (39) 859.
 - spp., on pines, (31) 845.
 - stalactiforme, infection of Castilleja miniata with acidiospores of, (30) 148.
 - stalactiforme, notes, (30) 538.
 - strobi, see White pine blister rust.
- Peridermiums from Ohio, (40) 645.

- Peridroma**—
margaritosa spp., notes, (28) 854.
sauca, see *Cutworm*, variegated.
- Perilampidae** of Australia, (39) 154.
- Perilampidae** *syrrhi* n.g. and n.sp., description, (31) 554.
- Perilampus**—
chrysopae laevicephalus n.var., description, (36) 556.
chrysopae n.sp., description, (31) 459.
hyalinus—
 investigations, (27) 261
 leaf oviposition, (37) 162.
 parasitic on locusts, (32) 60.
 sp., notes, (27) 262; (31) 757.
- Perilitus**—
americanus, parasitic on lady beetles, (31) 355.
brevicollis, notes, (30) 459.
eleodis n.sp., description, (30) 256.
leptops, parasitic on apple root borer, (26) 353.
- Perilla** cake—
 analyses, (29) 467; (30) 267, 466.
 digestibility, (30) 267.
 feeding value, (29) 467, 869.
- Perilloides bioculata**, notes, (29) 455.
- Perillus** spp., notes, (27) 755.
- Perinephritis** in domestic animals, (26) 176.
- Periodates**, determination, (34) 712.
- Periodicity**, biological, (39) 317.
- Periodids**, organic, studies, (34) 502; (36) 313.
- Periodol**, studies, (39) 80, 286.
- Periplaneta**—
americana, see *Cockroaches*, American.
australasiae as a cotton pest, (32) 348.
orientalis, remedies, (28) 157.
- Peripneumonia** in bovines, immunization, (26) 676.
- Perisierola**—
emigrata n.sp., description, (37) 569.
emigrata, parasitic on pink bollworm, (37) 667.
nigrefum, notes, (37) 569.
- Perisoreus obscurus** n.subsp., description, (39) 154.
- Perisporiaceae** of South Africa, (40) 132.
- Perisporium** *wrightii*, studies, (27) 352.
- Perissarthron**, new genus, (40) 655.
- Perissoterpis pulchellus**, notes, (31) 356.
- Peritoneum**, absorption of fat in, (32) 563.
- Peritonitis**—
 in poultry, (39) 791.
 purulent, of the hen, (39) 393.
- Peritymbia** (*Phylloxera*) *vitifolii* *pervastatrix*, notes, (32) 847.
- Perrmanganate**—
 of potash, use against grape gray rot, (27) 850.
 solutions, preparation and keeping qualities, (38) 412.
- Permeability**—
 as affected by trivalent and tetravalent cations, (34) 34.
 notes, (35) 734.
 of barley grain, (40) 519.
 plant tissue, studies, (34) 731; (37) 128, 326, 431, 632; (38) 25; (39) 25, 26, 223, 630, 730.
 soils, (27) 819.
 soils, determination, (28) 29.
 soils, relation to irrigation, (32) 586; (38) 788.
 protoplasmic, colloidal hypothesis, (40) 818.
 selective, in living cells, (38) 523.
 studies, tissue tension method, (37) 326.
- Permutite**—
 absorption of phosphoric acid by, (28) 518.
 nitrogen, assimilation by plants, (29) 127, 517.
- Peroicid**, fungicidal value, (34) 847; (35) 46; (38) 151.
- Perodipus ordii luteolus** n.subsp., description, (37) 757.
- Peromyscus eremicus papagensis** n.subsp., description, (37) 757.
- Peronea minuta**, parasites of, (31) 752.
- Peronia ferrugana**, notes, (29) 252.
- Peronoplasmopara**—
cubensis, notes, (32) 342.
cubensis, studies, (36) 249.
 sp. on hemp, (38) 753.
- Peronospora**—
arborescens, notes, (31) 641; (34) 50; (36) 449; (38) 547.
cephalariae n.sp., studies, (29) 552.
cubensis, notes, (28) 443.
effusa, notes, (26) 548; (37) 550.
effusa, oospore parasite of, (31) 641.
gangliiformis, prevention, (26) 342.
grisea, notes, (31) 546.
- Peronospora**—Continued.
hyoscyami in tobacco seed beds, (33) 147.
hyoscyami, notes, (39) 551.
 infection studies with, (27) 47, 449.
jaapiana in Bohemia, (35) 650.
maydis, notes, (31) 242.
maydis, studies, (37) 552.
 n.spp., notes, (32) 442.
 parasitica on *Arabis laevigata*, (32) 54.
 parasitica, staining, (26) 52.
 pedicularis n.sp., notes, (28) 241.
 (*Plasmopara*) *viticola*, studies, (31) 346.
 polygona on buckwheat, (36) 646.
 relation to weather, (28) 550.
schachtii, notes, (30) 748; (32) 544.
schleideni, notes, (37) 553.
 sp., notes, (27) 253.
 sp. on cloves, (36) 348.
 sp. on hemp, (38) 753.
 sparsa, notes, (29) 650; (33) 854.
 spp. treatment, (26) 345; (28) 152, 245, 446, 552.
 trifoliorum, description, (26) 846.
 trifoliorum, notes, (28) 52; (32) 543.
 use of powdered fungicides against, (30) 651.
viciae, notes, (29) 243; (39) 850.
viciae, treatment, (32) 545.
viticola, see *Grape downy mildew*.
- Peronosporaceae**—
 notes, (32) 544.
 perennial mycelium in, (34) 154.
- Peronosporales**, North American, studies, (32) 442.
- Peroxidase**—
 action on chlorophyll, (37) 203.
 active principle of, (29) 202.
 activity in diseases of potatoes, (26) 548.
 as a ferment, (26) 202.
 as affected by alkalis, (29) 202.
 ferment nature of, (30) 11.
 histological-chemical detection, (26) 278.
 in alfalfa, (32) 411.
 human milk, (26) 410.
 mammary gland, (32) 412.
 milk as affected by heating, (29) 310.
 milk, inactivation, (40) 11.
 milk, notes, (29) 413.
 sterile milk, (28) 411.
 investigations, (33) 409.
 isolation from plants, (26) 326.
 notes, (27) 803.
 plant, mode of action, (36) 609.
 properties and action, (28) 609.
 reactions of milk, (32) 412.
 relation to respiratory pigments of plants, (26) 326.
 separation from catalase, (27) 408.
 use of term, (33) 329.
- Peroxydiastase** of wheat, resistance to heat, (26) 833.
- Perphosphate**—
 effect on activity of soil bacteria, (31) 821.
 use in agriculture, (38) 330.
- Perries**, single-variety, (40) 414.
- Perry**—
 analyses, (35) 717; (38) 114.
 clarifying with casein, (26) 26.
 defective, utilization, (40) 116.
 home manufacture, (40) 116.
- Persea**—
gratissima, new beetle affecting, (26) 151.
pubescens, analyses, (26) 612.
- Persimmon** codling moth in Japan, (40) 52, 167.
- Persimmons**—
 acidity, (32) 110; (37) 714.
 adaptation and variety tests, (29) 41.
 artificial ripening of, (26) 327.
 astringency in, (35) 820.
 beetles affecting, (27) 458.
 changes in during ripening, (28) 444.
 culture and use, (32) 744.
 culture in southern Texas, (32) 539.
 diseases in Japan, (40) 52.
 dried, preparation, (27) 344.
 induction of nonastringency in, (29) 264.
 Japanese—
 analyses, (28) 525.
 anthracnose of, (27) 251; (37) 656.
 as affected by pollination, (31) 440.
 culture experiments, (28) 142; (38) 41.
 culture in California, (36) 141.
 pollenizers for, (30) 740.
 ripening artificially, (27) 344.
 loss of astringency during ripening, (26) 327.

Persimmons—Continued.

- navel, notes, (36) 536.
- new descriptions, (29) 436; (31) 337.
- notes, (34) 43.
- parthenogenesis in, (29) 837.
- premature dropping, prevention, (26) 237.
- processing experiments, (27) 344.
- reducing and nonreducing sugars in, (29) 503.
- seedless fruits of, (32) 142.
- stocks for, (32) 337.
- tannin masses in, (30) 502.
- tannin-colloid complexes in, (26) 564; (27) 228.
- Pestillation, notes, (37) 409.
- Peruvian bark, methods of analysis, (37) 113.
- Pervaporation, notes, (37) 409.
- Pestalozzia—
 - briardi, notes, (38) 448.
 - capiomonti n.sp., description, (28) 443.
 - feljoae and P. luciae n.spp., (39) 549.
 - funerea, morphology and life history, (32) 346.
 - funerea, notes, (38) 225. 849.
 - funerea, notes and treatment, (27) 548.
 - hartigi, notes, (27) 451.
 - heterospora n.sp., description, (30) 48.
 - palmarum, notes, (26) 145; (28) 241; (33) 545, 650; (34) 56, 241, 442; (35) 153, 243, 251; (36) 347; (37) 252, 253, 452; (38) 354, 758; (39) 57.
 - sp., notes, (29) 345; (31) 646.
 - sp. on grapes, (32) 751.
 - sp. on Hevea and Kentia, (36) 348.
 - sp. on tea, (38) 354.
 - spp., notes, (30) 152; (39) 453.
 - spp., on cacao, (36) 347.
 - spp., relation to apple rot, (33) 348.
 - theae n.sp., description, (38) 648.
 - uvicola, notes, (31) 844; (39) 52.
 - versicolor, notes, (30) 351.
- Pests in Montana, (31) 648.
- Petalidium—
 - spp., analyses and digestibility, (27) 871.
 - spp., analyses and digestibility, (32) 167.
- Petermann's solution, preparation, (32) 116.
- Petioles, change into stems, (35) 27.
- Petrel, leach, subspecies of, (38) 556.
- Petrochelidon lunifrons lunifrons, destruction of locusts by, (28) 351.
- Petrol, effect on soil microorganisms, (31) 27.
- Petrolatum dressing for burns, (40) 883.
- Petroleum—
 - as wood preservative, (28) 344.
 - fats and fatty acids of, (38) 714.
 - fly, notes, (27) 862.
 - fuels, carburetion, (37) 188.
 - insecticides, selection, (40) 59.
 - oils, effect on corn, (32) 729.
 - oils, fractionating apparatus, (39) 414.
 - oils, larvicidal value, (39) 466.
 - oxidation as affected by colloids, (30) 431.
 - products, effect on dormant trees, (29) 354; (30) 657.
 - products, inspection in South Dakota, (31) 359.
- Petroselinum sativum, notes, (30) 434.
- Pets, domestic, treatise, (28) 173.
- Pets, history and care, (38) 776.
- Petunia mosaic disease, studies, (36) 647.
- Petunias—
 - cut, preservation, (31) 837.
 - double seeding, notes, (34) 44.
 - inheritance of doubleness in, (34) 237; (36) 826.
- Pewees, feeding habits, (28) 57.
- Peyote, narcotic, studies, (34) 336.
- Peziza calycina, notes, (32) 844.
- Peziza (?) coffeicola, notes, (38) 51.
- Pezizella ombrophilaeae n.sp., notes, (37) 148.
- Pezomachus perniciosus n.sp., description, (30) 256.
- Pezoporus (Schenkia) tenthredinarum n.sp., description, (34) 456.
- Pfeiffer, Wilhelm, jubilee volume, (35) 430.
- Phacelia tanacetifolia, culture and analyses, (29) 535.
- Phacidia discolor, see Phacidium discolor.
- Phacidium—
 - discolor, notes, (27) 448; (37) 246.
 - infestans, notes, (28) 750; (37) 458.
 - infestans on western conifers, (36) 752.
- Phacopsora vitis, notes, (27) 353.
- Phadroctonus argyresthae n.sp., description, (38) 165.
- Phaedon betulae, notes, (27) 457.
- Phaedon cochleariae, notes, (36) 658.

- Phaenodiscus partifuscipennis n.sp., description (36) 260.
- Phaeoptilon spinosum, analyses and digestibility, (32) 167.
- Phaeosphaerella—
 - japonica n.sp., description, (27) 149.
 - macularis, notes, (29) 51.
- Phaeosphaeria bambusae n.sp., studies, (27) 154.
- Phagocytosis—
 - notes, (26) 676.
 - principles of (32) 78.
- Phalacrus curruscus, notes, (30) 241.
- Phalaris—
 - bulbosa—see also Canary grass.
 - culture experiments, (34) 631.
 - culture in Hawaii, (32) 729.
 - culture in Rhodesia, (27) 32.
 - culture under dry farming, (30) 435.
 - culture under irrigation, (33) 228.
 - notes, (30) 434.
 - production and use, (40) 442.
 - nodosa, analyses, (33) 169.
 - spp., culture experiments, (27) 234.
 - stenoptera, culture in California, (38) 637.
- Phalara bucephala, destruction by heat, (28) 752.
- Phalonia—
 - rutilana, notes, (28) 554.
 - spartinana, life history, (37) 358.
- Phanerogamic parasites, notes, (31) 641.
- Phanerotoma—
 - erythrocephala n.sp., description, (38) 165.
 - franklini n.sp., description, (38) 165.
 - tibialis, notes, (31) 453, 752.
 - tibialis, parasitism, (33) 353.
- Phanurus—
 - emersoni n.sp., description, (35) 659.
 - flavus n.sp., description, (32) 454.
- Phaonia signata, hibernation, (34) 254.
- Phaonia spp., studies, (37) 764.
- Pharbitis hederacea, fasciation in, (37) 434.
- Pharmaceutical chemistry, review of literature, (32) 678.
- Pharmacognostic tables, book, (32) 79.
- Pharmacology—
 - for veterinarians, textbook, (29) 580.
 - papers on, (29) 676; (33) 279.
 - progress in 1910, (28) 777.
 - studies, (31) 277.
- Pharmacopoeia—
 - extra British, (29) 580.
 - of United States, (32) 875; (36) 378.
- Phaseolin—
 - lysin content (31) 559.
 - utilization, (26) 564.
- Phaseolus—
 - aconitifolius, analyses, (38) 368, 572.
 - aconitifolius, culture experiments, (37) 131.
 - acutifolius—
 - culture experiments, (38) 635.
 - var. latifolius, notes, (28) 640.
 - adenanthus, culture, (34) 736.
 - angularis, studies, (40) 131.
 - calcaratus, effect on nitrogen content of soils, (31) 733.
 - lunatus—
 - analyses, (29) 215.
 - culture experiments, (36) 830; (38) 635.
 - intoxication of horses by, (26) 887.
 - selection experiments, (38) 635.
 - multiflorus, bud variation in, (35) 329.
 - mungo, analyses, (38) 572.
 - mungo as green manure for rice, (30) 339.
 - mungo, culture experiments, (38) 749.
 - mungo for classroom work in genetics, (37) 831.
 - mungo radiatus, analyses, (38) 368.
 - mungo radiatus, nodule formation, (38) 529.
 - radiatus, analyses, (38) 572.
 - semierectus as green manure, (37) 320.
 - semierectus, culture, (34) 736.
 - spp., agglutinating properties of seed, (31) 774.
 - spp., analyses, (31) 863.
 - spp., analyses and digestibility, (28) 464.
 - spp., descriptions, (31) 739.
 - spp., notes, (26) 362.
 - trinervis, notes, (30) 525.
 - variation due to effect of light, (39) 527.
 - vulgaris, relation of mortality to seed weight, (28) 636; (30) 237.
 - vulgaris, tetracotyledonous race, (36) 522.

- Phasianus**—
and *Gallus* hybrids, sex organs of, (28) 877.
spp., notes, (27) 355.
- Phasin**, agglutinating properties, (31) 774.
- Phasin**, notes, (30) 204.
- Pheanella heveae** n.s.p., description, (27) 445.
- Pheasant** hybrids, sterility in, (29) 575.
- Pheasants**—
and fowls, hybridization experiments, (29) 575.
artificial insemination in, (31) 370.
breeding and care, (35) 275.
breeding experiments, (28) 578.
care and management, (34) 569.
Chinese, in Missouri, (27) 550.
crossbreeding experiments, (34) 564.
crossing with fowls, (27) 573.
food habits, (40) 254.
habits of, (31) 154.
hybridization, (30) 266, 564; (32) 869.
notes, (27) 355.
propagation, (28) 752.
rudimentary parthenogenesis in, (31) 765.
secondary sex characters in, (26) 774; (40) 871.
secondary sex characters in, transmission, (32) 264.
unilateral development of secondary male characters in, (31) 271.
- Pheidole megacephala**—
as fruit-fly enemy, (40) 459.
destructive to flies, (30) 554.
notes, (38) 557.
- Phellomyces sclerotiphorus**, notes, (36) 544.
- Phenacaspis eugeniae**, notes, (29) 654.
- Phenacetin**, periodids of, (34) 502.
- Phenacoccus**—
acricola, notes, (26) 147, 856; (33) 253; (34) 752.
aceris, notes, (38) 464.
artemisiae, parasite of, (29) 359.
n.spp., descriptions, (40) 262.
spp., notes, (29) 251.
- Phenic acid**, aerobic fermentation, (30) 28.
- Phenice moesta**, notes, (26) 857.
- Phenodonus destruens**, studies, (34) 156.
- Phenol**—
absorption by barley seeds, (37) 25.
action on plants, (40) 520.
antiseptic value, (40) 182.
antiseptics, (39) 184, 185, 586.
as milk preservative, (32) 576.
serum preservative, (33) 280.
soil disinfectant, (31) 621.
wood preservative, (27) 314.
detection, (26) 412; (28) 805.
disappearance from creosoted wood, (29) 111.
effect on soil organisms, (31) 27; (38) 420.
effect on "virus fixe" of rabies, (26) 88.
excretion by sheep, (28) 874.
excretion on exclusive oat diet, (40) 273.
fallacies regarding, (35) 484.
in oil, germicidal power, (40) 882.
oxidation by peroxidase, (29) 202.
polyatomic, detection in apples, (26) 208.
preservatives, determination in serums, (38) 316.
sterilization of soils by, (32) 816.
toxicity, (38) 283.
use against tetanus, (29) 883.
- Phenolic insecticides and fungicides**, (35) 208.
- Phenological observations**—
at Wauseon, Ohio, (33) 825.
importance, (34) 536.
in British Isles, (37) 717; (40) 210.
in Holland, (40) 716.
in Nova Scotia, (36) 208.
on cereals, (40) 811.
- Phenology**—
relation to fruit culture and agriculture, (29) 15.
use in agriculture, (26) 613.
value of temperature sums in, (27) 509.
- Phenolphthalein**, detection in ethyl alcohol, (29) 312.
- Phenolsulphthalein**—
electrical conductivity, (37) 409.
indicators, studies, (40) 202.
- Phenosperry** in *Nicotiana*, (34) 136.
- Phenylalanin**—
action upon esters, (31) 711.
as source of ammonia, (29) 723.
- Phenylhydrazids** of acids of sugar group, (37) 201.
- Phenylhydrazin** reaction, modification, (26) 115.
- Phidippus coloradensis**, notes, (29) 455.
- Philaenatomyia**—
crassirostris, notes, (31) 777.
insignis, mouth parts and sucking apparatus of, (29) 760.
- Philaenus** spp.—
injurious to grass, (36) 856.
life history, (36) 458.
- Philagathes laetus**, notes, (36) 654.
- Philaronia bilineata**, life history, (36) 458.
- Philephedra theobromae** n.s.p., description, (35) 358.
- Philippine**—
College of Agriculture, notes, (36) 600; (37) 100.
Islands, development, (35) 193.
- Phillipsite**—
extraction of potash from, (27) 323.
fertilizing value, (27) 725.
- Phillyrea media**, fatty acids of, (31) 312.
- Philogalleria sextuberculata** n.s.p., description, (28) 162.
- Philoponectroma pectinatum** n.s.p., description, (31) 355.
- Philotrypesis** n.spp., descriptions, (30) 55.
- Philtraea elegantaria** affecting privet, (38) 765.
- Phlebotaphia malthesoni**, notes, (29) 252.
- Phlebotomi**, Maltese, studies, (35) 57.
- Phlebotomus**—
atroclavatus n.s.p., notes, (30) 658.
habits, (29) 856.
life history, (26) 349.
minutus africanus, relation to oriental sore, (32) 780.
minutus, flagellate infection of, (32) 60.
minutus, natural host of, (30) 159.
papatasi, notes, (26) 656.
papatasi, relation to "three days fever," (32) 59; (37) 460.
review of literature, (30) 159.
verrucarum, relation to verruga, (30) 252, 658; (32) 248, 350; (37) 358, 460.
verrucarum, review of investigations, (35) 258.
vexator, feeding habits, (31) 352.
- Phlegethontius**—
quinque-maculatus, see Tobacco worm.
sexta, see Tomato worm.
spp. injurious to horse nettle, (35) 657.
- Phleopora pteleae** n.s.p., description, (37) 748.
- Phlepsius**—
apertus, life history, (35) 553.
irroratus, notes, (27) 858.
n.s.p., description, (34) 255.
- Phleum**, ash constituents of, (30) 334.
- Phloeophthorus liminaris**, see Peach bark beetle
- Phloeosinus** n.spp., descriptions, (35) 856
- Phloeothripidae**, synonymy, (35) 255.
- Phloeothrips oleae**—
endophagus parasite of, (26) 553.
enemies of, (26) 246.
notes, (27) 55.
- Phloeotribus**—
liminaris, notes, (36) 258.
oleae, notes, (27) 857.
porteri, notes, (37) 460.
puncticollis, notes, (27) 458.
- Phlomis pungens**, drought resistance, (36) 734
- Phlorizin**, action on milk secretion, (37) 272.
- Phlox**—
as host of eelworm, (34) 349.
culture in Alaska, (29) 743.
drummondii, heredity of color in, (33) 644.
nematodes affecting, (31) 56.
plant bug in Maryland, (38) 155.
varieties, (34) 836.
- Phlyctaenia**—
ferrugalis, notes, (26) 147; (28) 854; (37) 255.
heveae n.s.p., notes, (39) 452.
rubigalis, notes, (26) 147.
- Phlyctaenodes**—
mudalis, notes, (31) 849.
sticticalis, life history and remedies, (31) 550, 551.
sticticalis, notes, (31) 155, 157, 548.
- Phobetes albinipennis**, notes, (27) 558.
- Phoebe**, black, destruction of locusts by, (28) 351.
- Phoebes**, feeding habits, (28) 57.
- Phoenicoccus marlatti**—
notes, (29) 255.
remedies, (30) 358.

- Phoenix**—
canariensis, culture in Arizona, (32) 233.
daetylifera, culture in Egypt, (27) 645.
ripening processes of, (26) 310.
skipper, life history and habits, (29) 655.
- Pholiota**—
adiposa, description, (35) 755.
spp. on forest trees, (40) 349.
- Phoma**—
anethi, notes, (28) 851.
apicola, relation to celery root scab, (33) 547.
apicola, studies, (30) 847.
apicola, treatment, (33) 848.
arbuti n.sp., description, (37) 557.
asparagi and *Cytospora stictostoma*, relation, (38) 752.
batatae, notes, (29) 153.
batatae, studies, (28) 548.
betae, nitrogen fixation by, (37) 123.
betae, notes, (26) 548; (27) 544, 728; (29) 647; (30) 47, 448; (31) 344; (34) 350.
betae on sugar beet leaves, (33) 246.
betae, physiology of, (28) 545, 628; (33) 53.
betae, relation to sugar beet damping off, (33) 246.
betae, studies, (34) 156; (35) 546.
betae treatment, (25) 648.
brassicae, notes, (34) 241.
bumeliae n.form, description, (37) 748.
cajani, notes, (34) 52.
cinerescens, notes, (38) 454.
citricarpa, notes, (34) 644.
citricarpa, treatment, (33) 149; (37) 352.
cookei *retisporea* n.var., description, (32) 149.
destructiva on tomatoes, (33) 147.
foeniculina, notes, (30) 240, 746.
(*Fusicoccum cinerescens*, notes, (27) 747.
heveae, notes, (35) 45.
lavandulae, studies, (38) 851.
lingam, studies, (40) 846.
mail, notes, (34) 543, 646; (37) 842.
napobrassicae, notes, (23) 547.
niphonia n.sp., description, (35) 348.
oleracea, notes, (39) 52.
oleracea, studies, (26) 546.
pectinata n.sp., description, (37) 748.
piceina, description, (27) 450.
pimentivora n.sp., description, (27) 253.
pithya, notes, (26) 852.
pomi, notes, (27) 652, 849; (30) 541; (38) 550.
rostrata n.sp., description, (32) 842.
socia n.sp., description, (35) 153.
solani, notes, (31) 747.
sp. affecting potatoes, (31) 345.
sp. affecting sugar cane, (31) 539.
sp., injurious to figs, (26) 449.
sp., notes, (28) 750; (30) 651, 747.
sp. on potatoes, (40) 51.
sp. on young cedars, (38) 53.
spp., inoculation experiments, (27) 651.
spp., notes, (29) 547; (31) 244, 646.
spp., treatment, (33) 848.
tabifica, notes, (26) 747; (37) 249.
tuberosa n.sp., description, (36) 249.
umbilicaris n.sp., description, (26) 449.
- Phomopsis**—
British species, (38) 752.
- citri**—
description and history, (40) 158.
distribution, (38) 757.
life history and treatment, (28) 245.
n.sp., notes, (28) 549.
notes, (29) 248.
relation to citrus gummosis, (37) 656.
studies, (28) 651; (29) 247; (31) 750; (33) 55; (39) 56.
treatment, (33) 149.
kalmiae n.sp., description, (39) 253.
- mail**—
inoculation experiments, (31) 150.
n.sp., description, (28) 748.
n.sp., notes, (29) 154.
notes, (34) 247; (36) 451.
relation to apple rot, (33) 348.
palmicola arecae n.var., notes, (37) 148.
sp. on eggplant, (39) 454.
sp., studies, (26) 449.
vexans n.comb., studies, (31) 747.
- Phomatospora migrans** n.sp., notes, (37) 148.
- Phonolite**—
as source of potash, (36) 728.
effect in water culture, (28) 817.
fertilizing value, (26) 726; (27) 125, 421, 725; (28) 522; (29) 215, 319, 625; (30) 221, 427, 527, 724; (31) 423, 519, 527.
ground, fertilizing value, (28) 125.
ground, zeolitic properties, (29) 518.
indirect effects of, (28) 725.
meal, fertilizing value, (35) 323.
potash, solubility, (34) 328.
solubility, (30) 221.
- Phonolites**, Austrian, fertilizing value, (38) 726.
- Phonolith** as fertilizer, (26) 526.
- Phora**—
fasciata, notes, (39) 868.
spp., destruction of *Melipona* bees by, (31) 255.
spp., larval morphology, (30) 757.
- Phoracantha**—
recurva, notes, (36) 360.
sempunctata on eucalyptus, (39) 868.
- Phoradendron**—
juniperinum libocedri, parasitism, (27) 655.
parasite on *Phoradendron*, (40) 226.
sp., notes, (37) 453.
villosus, infection experiments, (30) 247.
- Phoranthus occidentis**, notes, (36) 255.
- Phorbas mirabilis**, studies, (40) 265.
- Phorbia**—
brassicae, see Cabbage maggot.
ceparum, see Onion maggot.
fusiceps—see also Bean fly and Bean maggot.
notes, (27) 864; (32) 448; (36) 657; (37) 854.
remedies, (30) 355.
muscaria, hibernation, (34) 254.
- Phoridae**—
in United States National Museum, (30) 56.
synonymic catalogue, (34) 654.
- Phormia**—
azurea, sense reactions, (40) 859.
regina, hibernation, (38) 262.
regina, life history, (30) 656.
regina, notes, (28) 255; (34) 554; (38) 161.
- Phormidium tenue**, notes, (28) 31.
- Phormium tenax**—
binder twine from, (27) 534.
fiber, strength of, (29) 313.
- Phorocera**—
claripennis—see also *Euphorocera claripennis*.
notes, (29) 455; (31) 752.
parasitic on alfalfa caterpillar, (32) 58.
parasitic on army worm, (34) 251.
erecta, parasitic on beet webworm, (26) 250.
saundersii, notes, (28) 253.
xanthura, notes, (27) 559.
- Phorodon humuli**, see Hop aphid.
- Phosphatases** in malt, (34) 502.
- Phosphate**—
agricultural, fertilizing value, (31) 820.
Algerian, fertilizing value, (29) 519, 632; (31) 820.
Algerian, utilization in different soils, (30) 221.
ammonium-magnesium, from urine, (40) 320.
basic, fertilizing value, (35) 428.
basic lime, analyses, (39) 222.
Belgian, fertilizing value, (34) 518.
Bernard, fertilizing value, (31) 820; (32) 323.
buffer mixtures, hydrogen electrode potentials of, (35) 801.
calcined, analyses, (32) 32.
calcined, fertilizing value, (30) 427, 721; (38) 619.
citrate-soluble, fertilizing value, (28) 721.
- deposits**—
awards for location in Germany, (39) 521.
in Alabama, (31) 31.
Alberta, (35) 429.
Australia, utilization, (40) 25.
Chile, (32) 723.
DeCATur County, Tennessee, (29) 822.
Egypt, (30) 723.
Florida, (34) 424, 821.
Florida, origin, (30) 222.
Idaho, (28) 626; (31) 622; (35) 429.
Idaho and Wyoming, (40) 725.
Madagascar, (30) 724; (31) 623.
Montana, (28) 625; (32) 323; (34) 329; (36) 728.
Nauru Island, (31) 321.
North America, (27) 500; (29) 128.
northern Utah, (32) 217.
Russia, (27) 521.

Phosphate—Continued.
deposits—continued.

- in Salt River Range, Wyoming, (35) 219.
 - Siam, (33) 220.
 - South Africa, (40) 127.
 - South Carolina, (30) 27; (33) 518.
 - southwestern Virginia, (30) 626.
 - Tennessee, (31) 220; (32) 723; (34) 724; (35) 522; (36) 220.
 - the Ukraine, (40) 320.
 - Tunis, origin and formation, (28) 523.
 - United States, (27) 22, 327, 627; (31) 323, 518.
 - western United States, (29) 822.
 - mineralogy and geology of, (35) 429.
 - occurrence and mining, (33) 126.
 - origin, (31) 725.
 - western, origin, (39) 820.
 - effect on cranberries, (30) 143.
 - effect on growth of tubercle bacilli, (29) 381.
 - excretion as affected by water drinking, (34) 763.
 - excretion during fasting, (30) 764.
 - field of central Kentucky, (39) 329.
 - fixation, enzymatic, notes, (28) 804.
 - flour, fertilizing value, (33) 227.
 - for spinach, (32) 540.
 - hexose, as affected by enzymes, (30) 410.
 - in New Zealand, (34) 519.
 - industry in Algeria, (29) 519.
 - industry in United States, (37) 217.
 - insoluble, fertilizing value, (36) 332.
 - insoluble, utilization by plants, (28) 526; (29) 423.
 - islands, coral, in Pacific Ocean, (31) 725.
 - mineral, fertilizing value, (39) 625.
 - mining practice in Tennessee, (29) 517.
 - natural, fertilizing value, (34) 330.
 - Norwegian, fertilizing value, (34) 518.
 - of lime, *see* Calcium phosphate.
 - Palmaer—
 - fertilizing value, (27) 500; (28) 222; (34) 330.
 - preparation, (28) 222.
 - residual effects, (26) 428; (28) 33.
 - potash fertilizers, new, (38) 519, 726.
 - potash fertilizers, Schröder's, tests, (38) 520.
 - precipitated, as affected by calcium carbonate, (26) 428.
 - precipitated, fertilizing value, (37) 323.
 - Redonda, fertilizing value, (33) 723.
 - reverted, fertilizing value, (39) 521.
 - Rhenania, description, (38) 520.
- rock—
- action of citric and nitric acids on, (40) 506.
 - action of mineral acids on, (36) 711.
 - action of sulphurous acid on, (34) 220.
 - analyses, (31) 823.
- rock as affected by—
- ammonium nitrate, (28) 225.
 - grinding, sifting, and roasting, (34) 220.
 - iron sulphid, (29) 419.
 - nitrification, (39) 24.
 - sulphur and manure, (39) 118.
- rock—
- as corrector of soil acidity, (40) 815.
 - availability, (27) 726.
 - availability as affected by cow manure, (27) 726.
 - availability for plants, (35) 520.
 - calcined, fertilizing value, (26) 33.
 - composting with sulphur, (36) 26; (38) 817; (39) 624, 821.
 - composting with sulphur and manure, (39) 118.
 - conservation, (36) 219, 220.
 - effect on composition of wheat, (38) 518.
 - effect on nitrogen fixation, (28) 816.
 - effect on tomatoes, (29) 339.
 - factors affecting availability, (27) 127.
 - fertilizing value, (27) 325, 434; (28) 721, 737, 815, 816; (29) 31, 418, 831; (31) 139, 823; (32) 518; (33) 516; (35) 532, 724; (36) 23, 425, 626, 735, 738, 820; (37) 214, 228, 831; (38) 217, 325, 326, 422, 619, 625, 817, 825; (39) 22, 25, 32, 127, 220, 327, 335, 436, 520, 528, 537, 624, 818, 819.
 - fertilizing value and use, (37) 723.
 - field test for, (26) 34.
 - finely ground, fertilizing value, (28) 816.
 - for fowls, (31) 569.

Phosphate—Continued.
rock—continued.

- for Missouri soils, (33) 212, 213, 214, 215.
 - peaty pastures, (36) 425, 740.
 - pig feeding, (40) 772.
 - ground, analyses, (27) 327.
 - ground, as affected by ensiling, (31) 422, 623.
 - ground, effect on maturity of cotton, (31) 39.
 - ground, fertilizing value, (26) 33, 426, 817; (31) 630.
 - heat treatment of, (31) 823.
 - methods of analysis, (27) 610.
 - mining and preparation, (31) 725.
 - mining in Florida, (31) 323.
 - mixing with superphosphate, (37) 816.
 - of United States, (39) 428.
 - origin and preparation, (34) 724.
 - preparation, (39) 724.
- rock, production—
- and use, (32) 126, 425; (33) 218, 219, 819; (39) 819.
 - in Florida, (29) 25; (30) 222.
 - 1910, (26) 34.
 - 1911, (27) 326.
 - 1912, (29) 519.
 - 1912-13, (31) 323, 422.
 - 1914, (35) 121; (36) 124.
 - 1915, (36) 219.
 - 1916, (37) 816.
 - 1917, (39) 821.
 - United States, (32) 424; (36) 428.
- rock—
- raw, assimilation by plants, (33) 519.
 - raw, fertilizing value, (26) 33; (30) 25; (32) 325, 629; (33) 32, 723.
 - solution by soil bacteria, (35) 723.
 - statistics in United States, (27) 327.
 - sulphur-treated, solubility in calcareous soil, (40) 128.
 - Tunisian, fertilizing value, (30) 721.
 - use as fertilizer, (30) 127; (34) 328.
 - use on poor soils, (31) 217.
 - utilization by oats and lupines, (31) 733.
 - v. superphosphate, (35) 520.
 - waste in Florida, (28) 221.
 - salts, toxicity to soy beans, (39) 727, 827.
 - Thomas, fertilizing value, (34) 431; (37) 521.
 - tricalcium, solubility, (39) 23.
 - Tunis, for peat soils, (29) 519.
 - v. potash fertilizers, (40) 824.
 - Viborg, fertilizing value, (27) 627.
 - Wolter's, fertilizing value, (34) 330.
- Phosphates—*see also* Superphosphates.
- absorption and solution in soils, (35) 512.
 - absorption by soils, (26) 122.
 - after effects, (33) 723.
 - Algerian and Tunisian, production, (27) 727.
 - analyses, (26) 127; (34) 222; (35) 428.
 - as affected by—
 - ammonium sulphate, (28) 818.
 - calcium carbonate, (26) 527; (27) 726.
 - fermenting manure, (29) 23.
 - fermenting mixtures, (29) 624.
 - lime, (26) 427.
 - availability, (28) 815.
 - availability as affected by lime, (28) 223.
 - bibliography, (27) 22.
 - calcium, iron, and aluminum, comparison, (40) 25.
 - comparison, (29) 319, 418, 516, 519, 632, 797; (30) 25, 26, 126, 427, 721; (31) 518, 630, 820, 823; (32) 323, 325, 518, 721; (33) 722; (34) 327, 330, 331, 518; (35) 323, 428; (36) 427, 428, 626, 738, 820; (37) 23, 521, 816, 831; (38) 218, 519, 527, 619, 625, 726, 817; (39) 22, 24, 25, 32, 127, 220, 327, 436, 438, 446, 520, 528, 537, 623, 625, 818; (40) 134, 230, 242, 516, 723, 724, 734, 828.
 - composition, (30) 839.
 - crude, judging, (31) 16.
 - determination, (26) 708.
 - determination in soil extracts, (32) 805.
 - determination in soils, (27) 515.
 - effect on—
 - activity of soil bacteria, (31) 821.
 - ammonia production and use in killed plants, (28) 327.
 - ammonification, (28) 724.
 - apples, (28) 144; (29) 438.
 - carbon-dioxid evolution in plants, (26) 822.
 - composition of meadow hay, (31) 524, 622.

Phosphates—Continued.

effect on—continued.

- conservation of pears, (29) 640.
- farm products, (27) 326.
- flax fiber, (31) 332.
- grasslands, (35) 630.
- living yeast cells, (26) 309.
- milk production, (34) 670.
- nodule production, (32) 727; (33) 134.
- plant respiration, (26) 627; (27) 731.
- proteolytic enzymes, (27) 108; (29) 309.
- root development, (33) 526; (34) 518.
- soil bacteria, (33) 515; (38) 818.
- softening power of soils, (37) 119.
- toxic action of coumarin, (28) 526.
- yield of cotton, (31) 136.
- yield of wheat, (33) 729.

experiments in Minnesota, (40) 320.

fertilizing value, (26) 427, 622; (27) 534, 627, 639; (28) 827; (30) 836; (32) 723; (37) 124, 229; (38) 133.

fixation in Java soils, (30) 722.

- for cotton, (31) 40.
- cranberries, (34) 150.
- forest nurseries, (32) 47.
- Kentucky soils, (35) 122; (39) 421.
- moor soils, (39) 438; (40) 230.
- Ohio soils, (39) 217.
- red soils of Brazil, (35) 725.
- sugar cane, tests, (38) 135.

history and use, (31) 125.

importance, selection, and use, (33) 624.

imports into Europe, (29) 319.

in animal nutrition, (31) 762.

rain and snow, (40) 19.

soils as affected by ignition, (29) 317.

the diet, (30) 465.

urine, conservation, (29) 317.

industry in United States, (39) 120.

inorganic, of soils, treatise, (27) 21.

insoluble, conversion, (40) 725.

insoluble, utilization by plants, (26) 321.

manufacture, (28) 818; (34) 329.

manufacture from milk, (30) 378.

methods of analysis, (34) 112.

mineral—

availability as affected by sulphur, (36) 821.

availability for plants, (35) 520.

chemical nature, (36) 613.

fertilizing value, (33) 313.

for calves, (33) 469.

solubility, (36) 626; (37) 124, 323, 324.

solubility in citric acid, (30) 721.

utilization by animals, (29) 870.

natural, assimilation by animals, (30) 467.

natural, utilization, (29) 520; (30) 822.

nutritive value, (26) 565.

of animal origin, (33) 126.

central Russia, utilization, (27) 627.

commercial fertilizers, (39) 25.

Florida, analyses, (36) 821.

the Jardines, origin and use, (28) 222.

organic, as affected by microorganisms, (29) 423.

Palestine, composition, (27) 627.

precipitated, manufacture, (29) 418.

production—

and use in 1911, (29) 213.

in Algeria and Tunis, (31) 321.

1913-14, (35) 23.

1913-1917, (39) 824.

1915-1916, (37) 523.

raw, as affected by calcium nitrate and ammonium sulphate, (29) 318.

raw, fertilizing value, (30) 229.

residual effects, (31) 319; (32) 331; (37) 23.

role in alcoholic fermentation, (29) 715.

slightly soluble, fertilizing value, (35) 326.

soil, as affected by calcium carbonate, (35) 816.

soil, as affected by ignition, (26) 803.

soil, availability, (34) 421.

soil bacteria in relation to, (40) 620.

soil, solubility as affected by ignition, (28) 312.

solubility, (38) 519.

solubility in—

ammonium citrate, (31) 125.

citric acid, (36) 727.

mineral acids, (34) 220.

mineral and organic acids, (38) 423.

soils, (26) 726.

sources, (32) 723.

Phosphates—Continued.

sources in United States, (26) 819.

trade in, (31) 29.

treatise, (33) 126.

use, (35) 325.

in France, (27) 727.

in Minnesota, (37) 217.

in Victoria, (29) 214.

on New Zealand soils, (29) 730.

on pastures, (26) 437.

on red soils, (32) 723.

utilization by plants, (33) 330.

utilization in different soils, (30) 221.

valuation, (30) 26.

world's supply, (39) 521.

Phosphates—

action, (27) 407, 408; (28) 110, 202.

as affected by toluol, (28) 803.

investigations, (30) 203.

Phosphatic—

fertilizer, new, (39) 427, 428.

fertilizers—

assimilation, (27) 725.

comparison, (26) 31, 123, 426, 536, 537, 538,

622, 817, 837; (28) 124, 721, 816.

effect on keeping quality of fruit, (27) 644.

effect on pasture grasses, (27) 125.

relation to grape chlorosis, (26) 344.

review of investigations, (27) 128.

use in France, (27) 326.

marls, analyses, (36) 821.

sands in Yonne, France, (27) 422.

slag—

accessory constituents of, (30) 723.

analyses, (30) 27; (37) 323.

analyses and fertilizing value, (35) 520.

application tests, (26) 331.

slag as affected by—

ammonium sulphate, (28) 818.

calcium carbonate, (26) 428, 527.

crumbling, (30) 722.

slag—

as soil neutralizer, (37) 815; (40) 125.

availability, (29) 797; (37) 816; (39) 24.

availability of phosphoric acid in, (35) 428.

citrate solubility, (36) 428.

composition, (27) 218; (29) 822; (30) 126.

slag, effect on—

activity of soil bacteria, (31) 821.

germination of seeds, (29) 328.

maturity of cotton, (31) 39.

potash salts, (28) 508.

the eye, (31) 29.

slag—

exports from Germany, (30) 724.

extraction with citric acid, (34) 331.

fertilizing value, (26) 33, 233, 331, 426, 533,

534, 536, 630, 817; (27) 234, 530, 535, 627,

638, 639, 725, 736, 834, 837; (28) 425, 721,

816; (29) 31, 228, 233, 319, 418, 519, 632,

635, 737, 829; (30) 126, 134, 230, 427, 436,

721, 835, 839; (31) 139, 518, 630, 820, 829;

(32) 323, 518, 630, 831; (33) 723, 729, 731;

(34) 22, 35, 298, 330, 518, 519; (35) 220, 428,

521; (36) 123, 217, 228, 738, 820, 833; (37)

29, 534, 540, 723, 815; (38) 135, 230, 432,

519, 527, 619, 634; (39) 429, 520.

for fruit trees, (29) 639.

for grass lands, (29) 530; (31) 132; (33) 330,

527.

for moor soils, (39) 438.

for peaty pastures, (36) 425, 740.

industry in Austria-Hungary, (33) 822.

insecticidal value, (28) 563.

inspection in Netherlands, (27) 725.

lime in, (26) 34, 205.

mixing with superphosphate, (37) 816.

open-hearth, (39) 520.

powders, methods of analysis, (33) 610.

preparation and use, (30) 27.

production and use in 1911, (29) 213.

production and use in 1913, (32) 425.

purchasing, (36) 738.

red coloration in, (34) 820.

residual effects, (26) 428; (37) 23.

solubility, (32) 116; (33) 519; (37) 323, 723;

(38) 519.

solubility as affected by fluorspar, (35) 204.

solubility in water saturated with carbon

dioxide, (35) 521.

Phosphatic—Continued. slag—continued.

- solubility in weak organic acids, (40) 709.
- soluble silicic acid in, (29) 409.
- use, (37) 723.
- use in Germany, (36) 726.
- use on pastures, (26) 437.
- use on peat soils, (37) 135; (38) 433.
- utilization by oats and lupines, (31) 733.
- utilization in different soils, (30) 221.
- valuation, (29) 823.

Phosphatids—

- betain from, (26) 713.
- distribution in milk, (36) 862.
- extraction from tissues, (35) 201.
- metabolism, (27) 464.
- nitrogenous hydrolysis products of, (31) 608.
- occurrence in milk, (30) 312.
- of milk, (33) 660.
- of the kidney, (30) 477.
- plant, studies, (27) 202.
- purification, (30) 410.
- studies, (30) 163.

Phosphites, determination, (40) 409.

Phosphomolybdic acid as reagent for saffron, (32) 207.

Phosphoproteins, loss from grass during curing, (32) 111.

Phosphoric acid—

- absorption by bacteria, (29) 315.
- absorption by forest soils, (28) 421.
- absorption by oats, (31) 632.
- absorption by soils, (31) 723; (33) 515.
- absorption by zeolites, (28) 518.
- action as affected by salts, (27) 623.
- as affected by alumina, (27) 722.
- affected by ammonium sulphate, (28) 818.
- affected by bacteria, (29) 315.
- water sterilizing agent, (29) 474.
- winter spray for fruits, (30) 641.
- assimilation by plants, (31) 219.
- assimilation by rice, (38) 340.

availability—

- as affected by carbon dioxide, (27)*514.
- in barnyard manure, (26) 323, 424.
- basic slag, (29) 797.
- bat guano, (27) 825.
- fertilizers, (32) 409.
- oil cakes, (26) 428.
- soils, (26) 321.
- biological absorption in soils, (27) 216.
- citrate-soluble, in crude phosphates, (31) 16.
- citric-acid soluble—
- determination, (30) 809.
- determination in Thomas slag powder, (29) 409, 410; (32) 611.
- production and fertilizing value, (32) 218.
- concentration in soils, (27) 413.
- determination, (26) 406; (27) 110; (28) 804; (31) 17; (32) 115, 294, 409; (33) 110, 803; (34) 314, 409, 805; (35) 415, 502, 503, 613; (37) 412, 615, 802; (39) 13, 312.

determination—

- as ammonium-magnesium phosphate, (33) 204.
- filter for, (38) 506.
- in baked goods, etc., (32) 206.
- basic slag, (27) 495.
- beer, (29) 798; (32) 297.
- beverages, (27) 499.
- blood, (40) 16.
- calcium phosphate, (34) 410.
- feed limes, (33) 115.
- fertilizers, (26) 108; (32) 205; (35) 12, 314.
- foods, (29) 809; (37) 618.
- mineral phosphates, (33) 13, 313.
- organic substances, (28) 20.
- peat soils, (39) 504.
- phosphate rock, (28) 111.
- phosphates, (31) 314.
- presence of colloidal silicic acid, (28) 203.
- presence of magnesium chlorid, (29) 609.
- slag, (29) 795.
- soils, (26) 21; (27) 514, 713; (28) 123, 610; (31) 16; (36) 505.
- Thomas slag, (31) 112, 410.
- vinegar, (27) 410.
- wine, (30) 414.
- of availability, (28) 222.
- displacement by water in leaves, (29) 218.

Phosphoric acid—Continued. distribution in—

- blood, (40) 176.
- loam soils, (31) 618.
- milk, (26) 610.

effect on—

- bread fermentation, (27) 268.
- burning quality of tobacco, (38) 140.
- decomposition of sugar in soils, (37) 628.
- peaches, (33) 840.
- quality of barley, (31) 330.
- soils, (26) 216.
- sugar beets, (30) 438.
- variation of tomatoes and beans, (29) 339.
- weed growth in meadows, (38) 141.
- yield of rubber, (31) 444.

esters of inosit, studies, (27) 406.

- exchange in plants, investigations, (28) 818.
- extraction from phosphates, (31) 329; (36) 712.
- fertilizing value, (27) 325, 436, 437; (29) 227; (30) 731; (33) 519; (38) 218.

fixation in soils, (30) 217; (33) 122; (35) 624, 725; (37) 423.

for meadow soils, (26) 424.

for peaches, (38) 242.

for sweet potatoes, (33) 337.

forcing plants with, (28) 837.

forms of, in soil, (38) 117.

from barnyard manure, (26) 123.

from "mine-run" phosphates, (39) 819.

hydrochloric-acid-insoluble, in soils, (29) 513.

importance in the animal organism, (33) 758.

in alcoholic extracts of leaves, (27) 731.

animal nutrition, (29) 869.

feeding stuffs, digestibility, (40) 769.

Hawaiian soils, (36) 427.

Loney, (33) 164.

humus of soils, (37) 121.

loess soils, (35) 809.

peas, (40) 508.

soil, solubility, (39) 24.

soils, notes, (26) 125.

soils, studies, (27) 500, 821; (28) 29.

soils, transformation, (28) 417.

starch, (34) 710; (36) 501.

wheat, studies, (27) 500.

inorganic, determination, (33) 111.

inositol, of feeding stuffs, (39) 14, 675.

insoluble, determination, (38) 205.

isolation from starch, (35) 502.

long-continued use, (34) 128.

loss during fusion with ammonium fluorid, (36) 613.

loss from manure, (32) 818.

loss from soils, (27) 321; (29) 211.

loss in drainage water, (26) 620.

loss in industrial wastes, (37) 630.

manufacture, (29) 418; (34) 329.

metabolism, (26) 765.

metabolism in infants, (29) 166.

minimum, for plant growth, (29) 22.

mobilization in soils, (26) 817; (31) 721; (36) 515.

organic, of cottonseed meal, (28) 505; (30) 707.

organic, of rice, (32) 712.

organic, of wheat bran, (32) 17.

organic v. inorganic, for fowls, (31) 569.

paper on, (26) 406.

precipitation as affected by inversion, (28) 715.

reaction of glycerol with, (31) 709.

recovering from phosphate rock, (36) 805.

relation to nitrogen in flour, (26) 661.

removal by corn crop, (37) 232.

removal from soil by crops, (39) 724.

reverted, assimilation by plants, (34) 331.

reverted, determination, (29) 795; (31) 714.

reverted, fertilizing value, (30) 428.

role in plant nutrition, (26) 530.

solubility in soils, (37) 18.

sources of, (39) 429, 430.

spring application, (33) 625.

use on moor soils, (27) 325; (38) 132.

water-soluble, determination in superphosphate, (30) 809.

water-soluble v. citrate-soluble, (36) 727.

Phosphoric anhydrid—

content of wheat and corn products, (39) 314.

determination, (27) 206.

determination in soils, (31) 313.

- Phosphoric acid—
in corn meal, (33) 752.
solubility in mixed fertilizers, (38) 519.
- Phosphorite—
as affected by calcium carbonate, (26) 428, 527
deposits in Russia, (35) 521; (38) 817.
fertilizing value, (29) 318; (37) 323.
Kasan, fertilizing value, (34) 330.
soil suitable for, (26) 623.
- Phosphorus—
as affected by ammonium salts, (29) 624; (35) 816.
assimilation by plants, (27) 340.
effect on soils, (26) 30.
from Sengilet, (34) 329.
Russian, superphosphates from, (27) 627.
- Phosphorus—
assimilation by *Aspergillus niger*, (26) 203.
assimilation by lower algae, (28) 35.
availability in soils, (31) 618.
casein, biological significance, (27) 169.
compounds—
assimilation by ruminants, (31) 71.
availability in rations for ruminants, (26) 568.
effect on milk, (26) 775.
effect on milk secretion, (27) 176.
in animal metabolism, (32) 601, 858.
in animal nutrition, (29) 869.
nutritive value, (26) 565, 765; (27) 775.
of cottonseed meal, (37) 502.
cottonseed meal and wheat bran, (29) 804.
seeds, (26) 501.
serum, (35) 714.
compounds, organic—
and inorganic, metabolism of, (33) 462.
decomposition, (26) 501.
hydrolysis by dilute acid and alkali, (31) 805.
hydrolysis by enzymes, (29) 166.
of feeding stuffs, separation, (27) 615.
of wheat bran, (28) 17, 505; (33) 11, 464, 802.
therapeutic value, (33) 664.
compounds, water-soluble, extraction from plants, (27) 407.
concentration in surface soil, (31) 720.
conservation in urine, (27) 500.
deficiency, effect on bones, (32) 561.
deficiency, effect on oat plant, (40) 324.
determination, (27) 503; (33) 803; (34) 409, 805; (39) 311; (40) 112.
determination—
as phosphoric acid, (28) 203.
citro-molybdate method, (28) 312.
in ash, (36) 204.
bone ash, (36) 806.
feces, (39) 675.
fertilizers and feeding stuffs, (32) 805.
foods, (29) 799.
milk, (27) 208.
plant materials, (35) 613.
plants, (26) 501.
presence of sulphuric acid, (34) 112.
proteins, (26) 501.
soil extracts, (34) 10.
soils, (27) 499; (34) 806; (36) 413, 612; (38) 205.
urine and feces, (39) 806.
vegetable products, (27) 410.
wheat, (40) 507.
diffusible, in cow's milk, (34) 271.
distribution in—
blue grass soils, (36) 424.
prairie surface soils, (36) 514.
striated muscle, (32) 561.
effect on—
alfalfa and other legumes, (37) 828.
Aspergillus spp., (29) 825.
bacterial activity of soil, (39) 325.
chlorophyll formation, (35) 435.
development of animals, (30) 465.
grapes, (31) 339.
growth of bones, (31) 69.
nutrition and growth in plants, (28) 225.
wheat, (39) 127.
for alfalfa, (30) 335.
for Missouri soils, (33) 212, 213, 214, 215.
- Phosphorus—Continued.
for South Dakota soils, (29) 728.
importance in animal nutrition, (31) 663.
in animal organism, (30) 669; (33) 167.
blood of lactating cows, (37) 308.
casein, (32) 606.
cottonseed meal, forms, (27) 611.
feeding stuffs, (30) 867.
flour, (26) 260.
foods, relation to nutrition diseases, (26) 264.
granitic soils, (37) 522.
growing pigs as affected by protein consumption, (32) 72.
Indian foodstuffs, (27) 461.
matière noire, studies, (26) 814.
seeds, variations in, (27) 108.
soils, effect on composition of turnips, (29) 417.
soils, solubility, (39) 821.
soils, studies, (28) 815.
turnip roots, relation to availability of soil phosphorus, (38) 326.
wheat and flour, (30) 362.
- inorganic—
determination, (32) 299; (34) 315.
determination in plant substances, (28) 21.
determination in turnips, (26) 527.
in milk, (37) 208.
metabolism of, (30) 669.
lecithin, determination in macaroni, etc., (33) 14.
lipoid and acid-soluble, determination in serum, (34) 613.
lipoid, in animals, (33) 69.
loss in curing hay, (26) 574.
manure as source of, (39) 427.
manuring, effect on composition of turnips, (26) 527.
metabolism—
in *Aspergillus niger*, (30) 727.
in 14-year old boys, (30) 262.
of, (30) 465.
of lambs, (33) 761.
of women, (40) 174.
on a rice and vegetable diet, (26) 865.
nutrition of plants, notes, (34) 805.
of citrus grove soils, (39) 421.
of different sources for oats and lupines, (31) 733.
organic—
and inorganic, nutritive value, (30) 97; (31) 563.
determination in soils, (26) 803; (28) 29.
from inorganic phosphates, (26) 772.
in soils, (36) 212.
pentoxid, determination, (36) 713.
physiology of during growth, (27) 169.
phytin, determination in plant products, (38) 11.
phytin, of feeding stuffs, (40) 772.
phytin, utilization by pigs, (39) 675.
removal from soil, (39) 517.
requirement of barley and oats, (37) 34.
resorption and retention by the intestine, (28) 865.
retention in growing pigs, (28) 469.
soil, as affected by heat and oxidation, (27) 122.
soluble, as affected by bacteria, (26) 723.
supply of United States, (31) 295.
- Phosphotungstate precipitate of yeast preparation, (35) 311.
Phosphotungstic acid, precipitating with, (26) 511.
Phosphotungstic-phosphomolybdic compounds as color reagents, (28) 804.
Photochemical effects from mercury vapor lamp and sunlight, (29) 218.
Photogrammetry, application to forestry, (26) 141.
Photometer for plant studies, (39) 524; (40) 521.
Photometric analysis, review of investigations, (34) 202.
Photomicrography of parasites, (29) 478.
Photosynthesis—
and low temperatures, review of literature, (32) 640.
artificial, studies, (33) 727.
as affected by incomplete culture solution, (38) 523.
dynamic aspects, (40) 223.
in cotton, studies, (27) 732.
plants, (27) 427.

- Photosynthesis—Continued.
 in plants, studies, (33) 627.
 submerged land plants, (32) 329.
 mechanism, (36) 730.
 methods of study, (39) 432.
 primary sugar of, (36) 30.
 relation to powdery mildew infection, (33) 244.
 relation to soil moisture, (36) 525.
 review of investigations, (35) 821.
 studies, (30) 524; (37) 524; (39) 432; (40) 326, 425, 426.
- Phototheodolite for forest measurements, (32) 340.
- Phototropism—
 as affected by temperature, (34) 628.
 studies, (34) 524.
- Phragmatiphila truncata*, notes, (40) 453.
- Phragmidium*—
 discolorum on rose, (33) 545.
 Japanese species, (27) 149.
 rosae-sempervirentis n.sp., description, (37) 557.
 rubi, notes, (33) 647.
 subcorticium, notes, (33) 854; (37) 550.
- Phragmites gigantea*, analyses, (33) 466.
- Phryganea grandis*, biology of, (26) 561.
- Phryganidia* sp., notes, (28) 159.
- Phrynosoma cornutum*, economic status, (33) 745.
- Phryxe vulgaris*, studies, (39) 658.
- Phthalate buffer mixtures, hydrogen electrode potentials of, (35) 801.
- Phthalic acid, effect on cyanogen formation in plants, (28) 527.
- Phthia picta*, notes, (40) 165.
- Phthirus pubis*, studies, (39) 659, 764.
- Phthorimaea operculella*, see Potato tuber moth and worm.
- Phycis* (*Dioryctria*) *abietella*, notes, (31) 849.
- Phycitinae*, new, of North America, (37) 564.
- Phycomyces nitens*—
 growth and sporulation, (28) 524.
 phototropism, (39) 223.
- Phycophaein*, relation to color change in brown algae, (31) 626.
- Phygadeuon*—
 epochrae n.sp., description, (30) 256.
 fumator, notes, (33) 862.
 sp., notes, (27) 562.
- Phylacogens*, use against horse diseases, (28) 587.
- Phyllachora*—
 graminis, notes, (37) 839.
 huberi, notes, (37) 253.
 roystoneae n.sp., description, (39) 147.
 sacchari, notes, (33) 550.
 texana n.sp., description, (37) 748.
 trifolii, notes, (28) 443.
- Phyllactinia*—
 corylea, notes, (38) 849.
 suffulta, symbiosis with filbert leaves, (37) 327.
- Phyllaphis cownei*, notes, (35) 56.
- Phyllocnistis citrella*, notes, (33) 655.
- Phyllococcus* n.g. and n.sp., description, (36) 551.
- Phyllocoptes*—
 amygdalina n.sp., description, (28) 357.
 n.spp., descriptions, (30) 362.
 schlehtendali, notes, (37) 570.
 vitis, destructive to grapevines, (26) 864.
 vitis, notes, (28) 550.
 vitis, relation to grape court noué, (30) 452.
- Phyllostromia hieroglyphica* in Hawaii, (40) 854.
- Phyllohamin*, characteristics, (26) 229.
- Phyllonorycter* (*Lithocolletes*) *crataegella*, notes, (32) 651.
- Phyllopertha horticola*, notes, (30) 53; (34) 454.
- Phyllophaga*—see also May beetle, June beetle, and *Laenosterna*.
 forbesi n.sp., description, (35) 467.
 n.spp., descriptions, (38) 161.
 n.spp., life histories, (38) 767.
 of Illinois, (35) 158.
 revision, (35) 467.
 spp., remedies, (38) 863.
- Phyllophosa membranifolia*, analyses, (37) 814.
- Phylloscelis atri*, studies, (31) 156.
- Phyllostachys bambusoides*, hydropsy of, (35) 354.
- Phyllosticta*—
 bacillaris n.sp., description, (37) 550.
 bacteroides minima n.var., description, (37) 550.
 basellae n.sp., studies, (31) 56.
 betae, notes, (28) 649; (33) 851.
 brassicae, *Mycosphaerella* stage, (34) 49.
 brassicicola n.comb., description, (32) 545.
- Phyllosticta*—Continued.
 briardi, treatment, (31) 841.
 cajani, notes, (34) 52.
 caryae, description, (30) 452.
 caryae, treatment, (37) 756; (39) 553.
 chenopodii(?), notes, (26) 548.
 citricola n.sp., notes, (39) 753.
 coffeicola, notes, (30) 751, (38) 51.
 congesta on plum, (39) 857.
 cucurbitacearum, notes, (37) 550.
 dżumajensis n.sp., description, (26) 446.
 euchaenae n.sp., notes, (37) 148.
 glumarum n.s.p., notes, (37) 148.
 hortorum, notes, (31) 747.
 insulana, notes, (26) 849.
 insularum n.s.p., notes, (37) 148.
 italica n.s.p., description, (37) 550.
 limitata, inoculation experiments, (27) 651; (31) 150.
 lychnidis n.sp., description, (28) 149.
 mediesgini, notes, (28) 443; (36) 248.
 mutant form of, (33) 249.
 n.spp., descriptions, (37) 748.
 paviae, perfect stage of, (33) 249.
 pirina, notes, (35) 547.
 pirina, studies, (29) 648.
 pirina, variation in, (38) 731.
 ramicola, notes, (34) 540; (35) 45; (38) 53, 759.
 ramicola, treatment, (29) 552.
 solitaria—
 control, (40) 639.
 notes, (34) 247, 646; (38) 550.
 studies, (37) 654.
 treatment, (31) 53.
 sp., notes, (34) 247.
 sp. on beets, (35) 245.
 sp. on citrus, (32) 845.
 sp. on rubber, (34) 744; (35) 251; (37) 253.
 sp. on sugar cane, (37) 553.
 sp., relation to citrus canker, (33) 56.
 spp., notes, (26) 341, 850; (28) 241; (32) 749.
 vanillae, description, (27) 450.
 violae, studies, (29) 753.
- Phyllotreta*—
 armoraciae, studies, (37) 566.
 attacking Cruciferae in central Europe, (30) 161.
 sinuata, notes, (32) 556.
 spp., notes, (29) 761.
 spp., remedies, (33) 158.
 vittata in Maryland, (38) 154.
 vittula, notes, (37) 765.
- Phyllotrox* spp., notes, (30) 357.
- Phylloxera*—see also Grape phylloxera.
 caryaecaulis, notes, (33) 58; (37) 255; (39) 557.
 caryaecaulis studies, (38) 157.
 galls on pecans, (32) 553.
 pervastatrix, notes, (31) 550.
 quercus, life history and habits, (32) 57.
 sp. on pecan, (33) 762.
 spp., notes, (34) 453.
 vitifolii pervastatrix, notes, (32) 847.
- Phylloxerinae*, treatise, (27) 859.
- Phylogeny*—
 and biotypes, discussion, (26) 878.
 treatise, (26) 163.
- Phymatin-ophthimo* reaction, diagnostic value, (26) 379, 584.
- Phymatrichum omnivorum* n.comb., studies, (36) 146.
- Physalis alkekengi* as mosaic carrier, (40) 251.
- Physaloptera rara* n.s.p., description, (40) 89.
- Physalospora*—
 affinis, n.s.p., notes, (37) 148.
 cydoniae n.s.p., studies, (30) 651.
 cydoniae, notes, (27) 747; (33) 348.
 cydoniae, studies, (36) 251.
 guignardioides n.s.p., notes, (37) 148.
 latitans, notes and treatment, (29) 250.
 theobromae n.s.p., description, (37) 755.
- Physalosporina* n.g. and n.spp., descriptions, (27) 46.
- Physarum cinereum*, notes, (27) 748.
- Physcia integrata sorechiosa*, notes, (38) 51.
- Physcus*—
 n.spp., descriptions, (31) 459.
 spp., notes, (27) 556.
 varicornis, notes, (26) 152.
- Physical geography, course in, (26) 596.
- Physical-chemical tables, book, (29) 107, 201.
- Physics in agricultural science, (36) 106.

- Physics of household, textbook, (33) 364.
- Physiography of Coastal Plain of Virginia, (28) 422
- Physiological—
action, relation to chemical constitution, (36) 411.
chemistry, compendium, (40) 109.
- Physiology—
bibliography, (28) 466; (31) 764; (32) 860.
cellular, studies, (28) 362.
chemical studies, (40) 201.
chemical, treatise, (37) 501.
comparative, handbook, (33) 168.
human, treatise, (29) 767.
in veterinary curriculum, (31) 492.
index catalogue, (32) 166, 565.
international catalogue, (34) 658; (40) 869.
nutritional, textbook, (28) 763.
of parturition, (26) 277.
papers on, (29) 676; (33) 279.
plant, *see* Plant physiology.
studies, (31) 277.
textbook, (26) 659.
treatise, (34) 777.
writings of J. von Liebig, (32) 109.
- Physocephalus sexualatus, notes, (28) 285.
- Physoderma—
sp. on corn, (34) 643.
zeae-maydis, notes, (38) 351.
zeae-maydis on corn, (32) 543.
zeae-maydis, studies, (40) 846.
- Physokermes piceae, *see* Spruce bud scale.
- Physonota unipuncta, notes, (38) 358.
- Physopella fici, description, (39) 757.
- Physostomum melospizae n.sp., description, (38) 761.
- Physothrips—
antennatus, notes, (35) 658.
funtumiae and its allies, (39) 360.
marshalli n.sp., notes, (39) 360.
n.sp., description, (35) 658.
setiventris n.sp. and P. lefroyi on tea, (40) 59.
xanthius in Trinidad, (40) 649.
xanthius n.sp., description, (38) 461.
- Phytalus—
insularis n.sp., description, (38) 161.
insularis n.sp., life history, (38) 768.
smithi, life history and remedies, (29) 858.
smithi, notes, (27) 259, 662; (28) 357, 752; (39) 752.
smithi, parasites of, (34) 455; (40) 265.
- Phytelephas macrocarpa—
description and utilization, (30) 46.
seed, feeding stuff from, (36) 367.
- Phytic acid—
composition and properties, (31) 708.
hydrolysis by dilute acid and alkali, (31) 805.
in cottonseed meal and wheat bran, (30) 707.
of wheat kernel, (37) 108.
- Phytin—
as source of phosphoric acid, (29) 423.
assimilation by ruminants, (31) 71.
chemistry of, (31) 707.
cleavage by fungi, (30) 805.
determination, (34) 10.
effect on elimination of nitrogenous compounds, (31) 561.
effect on growth of lupine seedlings, (28) 128.
effect on seedlings, (27) 26.
hydrolysis, (33) 11.
importance in the animal organism, (33) 758.
in corn, (31) 708.
in oats, (31) 707.
in seeds, investigations, (26) 501.
of inosit, studies, (27) 406, 712.
phosphorus of feeding stuffs, (40) 772.
phosphorus, utilization by pigs, (39) 675.
physiological effects, (27) 775.
properties, (28) 801.
studies, (30) 501; (31) 10; (32) 16; (33) 803.
- Phyto melanocephala parasitic on isopods, (39) 563.
- Phytobacter lycopersicum n.sp.—
description, (29) 246.
notes, (30) 450.
- Phyto-chemistry, studies, (30) 223.
- Phytodietus—
capuae, studies, (39) 466.
vulgaris, notes, (31) 752.
- Phytoglossus gonandra, notes, (30) 356.
- Phytolacca—
americana, notes, (30) 145.
decandra, critical flowering and fruiting temperatures, (38) 330.
- Phytometrinae in British Museum, catalogue, (31) 652.
- Phytomyza—
aquifolii in New Jersey, (34) 355.
aquilegiae, notes, (37) 255.
aquilegiae, studies, (36) 57.
chrysanthemi, *see* Chrysanthemum leaf miner.
flavicornis on Milan cabbage, (39) 661.
geniculata (horticola), notes, (27) 552.
orobanchia, notes, (31) 153.
- Phytonomus—
meles, notes, (28) 752; (29) 359.
murinus, *see* Alfalfa leaf-weevil.
nigrirostris, notes, (37) 255.
posticus, *see* Alfalfa weevil.
punctatus, *see* Clover weevil.
spp. injurious to alfalfa, (33) 555.
spp., notes, (27) 259.
variabilis, biology, (26) 151.
- Phytopathological—
culture supply laboratory, need of, (34) 539.
institute at Wageningen, report, (33) 444.
research, methods, (35) 844.
- Phytopathologists, relation to plant disease survey work, (39) 849; (40) 449.
- Phytopathology—
and botany, relationship, (34) 48.
observatory in Turin, (30) 47.
- Phytophaga destructor, *see* Hessian fly.
- Phytophthora—
arecae on potatoes, (32) 343.
cactorum, notes, (29) 549; (37) 550.
cactorum, studies, (34) 746.
colocasiae, description and treatment, (31) 52.
colocasiae, notes, (30) 845; (37) 148.
disease of cotton, (39) 754.
diseases of Hevea, (39) 459, 752, 759.
erythroseptica—
morphology and cytology of, (33) 53.
n.sp., description, (29) 550.
notes, (29) 549; (32) 239; (37) 350; (39) 250.
sexual organs, (39) 431.
studies, (31) 543.
- faberi—
notes, (27) 451; (29) 155, 248, 547; (31) 54, 242, 645; (32) 345; (33) 545; (34) 349, 540, 744, 849; (35) 45, 251; (36) 347, 746, 852, (37) 148, 349, 452, 458; (38) 53; (39) 151; 357, 752, 849; (40) 155, 252.
relation to cacao canker, (32) 548.
studies, (33) 549; (38) 554; (40) 54.
treatment, (27) 750; (30) 543; (38) 759.
infestans—*see also* Potato late blight.
notes, (40) 47.
on tomato, (39) 651, 850.
meadii n.sp. on Hevea, (40) 845, 852.
n.spp. from Japan, (39) 753.
nicotianae, studies, (37) 553.
notes, (31) 541.
- omnivora—
arecae, notes, (34) 55.
arecae, treatment, (36) 48.
as affected by cold, (34) 538.
notes, (26) 446; (28) 54, 55; (34) 644; (35) 353 (P. cactorum), notes, (36) 649.
on ginseng, life history, (31) 447.
on tomato and belladonna, (40) 844.
- parasitica—
n.sp., description, (29) 548.
on coconuts, (34) 349.
on Vinca rosae, (37) 844.
studies, (38) 547.
- phaseoli, notes, (39) 52.
rearrangement of species, (29) 550.
resting mycelia of, (29) 646.
review of literature, (31) 242.
sp. affecting cotton, (29) 749.
sp., notes, (26) 851; (27) 751.
sp. on castor beans, (34) 50.
sp. on coconut, (34) 50; (40) 751.
sp. on cotton, (40) 155.
sp. on oats, (35) 651.
sp. on rubber, (37) 757.
sp., relation to Hevea canker, (29) 352.
spp., notes, (29) 445; (39) 146.
spp. on cacao and nutmeg, (38) 554.
spp. on rubber, (38) 554, 759.
studies, (32) 442; (33) 244; (36) 747.
syringae, description and treatment, (29) 249.
syringae, notes, (30) 647.
terrestris n.sp., description, (38) 251.

- Phytophthora**—Continued.
 terrestria, studies, (39) 457.
 treatment, (28) 446.
- Phytoscapus dissimilis** n.sp., description, (35) 365.
- Phytosterol**—
 content of soy beans, (26) 607.
 crude, from coconut fat, (28) 809.
 detection in animal and vegetable fats, (29) 204;
 (32) 293.
 detection in animal fats, (31) 808; (35) 615.
 in plant fats, (32) 206.
- Piceallili**, recipes, (28) 715.
- Picea**—
 engelmanni, new leaf and twig disease of, (33)
 351.
 excelsa, phosphorus content, (26) 501.
 rubens, length of tracheids in, (33) 143.
- Picker dirt**, analyses, (32) 32.
- Pickle worm**, notes, (29) 353.
- Pickle worm**, studies, (34) 855.
- Pickles**—
 bottled, examination, (29) 361.
 manufacture, (30) 613.
 recipes, (32) 560; (38) 95.
 tomato, recipes, (28) 715.
- Pickling**—
 and preserving, (39) 614.
 treatise, (32) 253.
- Picolin carboxylic acid**, effect on plant growth, (28)
 324.
- Picotees**, handbook, (26) 139.
- Picramic acid**—
 in nitrogen determination, (40) 806.
 preparation, (40) 203.
- Piorasma excelsa** as an insecticide, (32) 649.
- Pioric acid**—
 as titrametric standard, (33) 611.
 in blood sugar determinations, source of error,
 (40) 116, 713.
 insecticidal and larvicidal value, (34) 359.
- Pitout disease** in cattle and horses, cause, (26) 783.
- Pidan**, analyses, (36) 362.
- Pie melons**, feeding value, (31) 265.
- Pieris**—
 brassicae—
 notes, (27) 755.
 parasites of, (40) 65, 264.
 remedies, (26) 561.
 studies, (40) 263, 656.
 monuste, notes, (28) 453.
 rapae in Maryland, (38) 154.
 rapae, studies, (40) 263.
 sp., notes, (26) 857.
 spp., feeding habits, (28) 553.
- Plesma capitata**, injurious to sugar beets, (26) 348.
- Pine grass**, analyses and use, (30) 437.
- Pig**—
 and corn clubs, combining, (30) 694.
 breeders' association in Bavaria, (30) 258.
 club manual, (33) 791.
 clubs—
 and the swine industry, (39) 498.
 in Alabama, (29) 792.
 Arkansas, (33) 95.
 England and Wales, (27) 471.
 the South, (31) 598.
 United States, (35) 195.
 manual, (40) 96.
 notes, (31) 794.
 organization, (30) 395; (33) 898.
 contest in North Dakota, (30) 899.
 disease, new, in Ireland, (32) 783.
 diseases—
 and parasites, notes, (33) 680.
 handbook, (37) 778.
 in British East Africa, (30) 576.
 in Portugal, (36) 280.
 law in Indiana, (31) 86.
 losses from, (35) 192.
 nature and treatment, (34) 383.
 nomenclature, (27) 77.
 notes, (26) 483; (32) 782; (34) 174; (37) 876.
 treatise, (32) 83, 277, 378; (34) 278.
 farm, plans, (34) 267.
 fence, portable, description, (26) 894.
 houses—
 and fixtures, plans, (29) 873.
 construction, (29) 292; (30) 389; (34) 590, 680;
 (35) 587; (36) 288, 590; (37) 90.
 floor plans, (28) 73.

- Pig**—Continued.
 houses—continued.
 for prairie farms, (35) 690.
 movable, (33) 90; (38) 894.
 movable, description, (32) 234.
 municipal, description, (37) 388.
 plans and specifications, (33) 783.
 ridding of flies, (26) 861.
 industry—see also Pigs, raising.
 in Canada, (32) 867.
 Hungary, (27) 672.
 Madagascar, (27) 572.
 Maryland, (32) 771.
 Montana, (31) 682.
 Oregon, (27) 299.
 United States, (26) 93, 571.
 Victoria, (27) 373.
 statistics, (27) 571.
- insurance**—
 clubs in England and Wales, (28) 367; (29)
 471.
 clubs in Great Britain, (30) 593.
 cooperative, in Great Britain, (31) 594.
 societies in Holland, (30) 493.
- manure**, analyses, (36) 120, 323.
 manure, storage experiments, (37) 623.
 offal, fertilizing value, (33) 470.
 para typhoid, immunization, (33) 285.
 registration, objects and results, (26) 168.
 skin, histology, (28) 366.
 typhoid, relation to hog cholera, (31) 87.
- Pigeon**—
 disease, studies, (34) 83.
 eggs, bilaterality of, (28) 668.
 grass, analyses, (30) 671; (32) 169; (34) 39.
 grass seed, analyses, (27) 170.
 manure, analyses, (38) 23.
 manure, fertilizing value, (29) 129.
 manure, nitrogen and phosphoric acid content,
 (26) 323.
 pea branch disease, notes, (38) 350.
 pea diseases, descriptions, (34) 52.
 pea diseases, notes, (36) 544.
 pea-sorghum mixtures, tests, (26) 631.
 peas—
 analyses, (29) 569.
 as a cover crop, (31) 635; (34) 736.
 as host of Cladosporium sp., (31) 646.
 culture and use, (40) 763.
 culture experiments, (27) 336, 841; (28) 136;
 (31) 733, 829; (32) 227; (37) 729, 734; (38) 336,
 527, 635, 827, 829.
 culture in Guam, (40) 328.
 factors affecting cooking, (35) 556.
 fertilizer experiments, (38) 230.
 germinating, enzymes of, (38) 9.
 green manuring experiments, (37) 734; (38)
 230.
 injurious to pineapples, (33) 535.
 insects affecting, (27) 155; (30) 752; (33) 153.
 irrigation experiments, (35) 286.
 varieties, (26) 631; (30) 525, 731; (31) 732, 829;
 (37) 825; (38) 828.
- Pigeons**—
 breeding for squabs, (33) 173.
 breeds of, studies, (26) 169.
 care and management, (28) 173; (39) 176.
 color inheritance in, (40) 275.
 determination of age, (32) 470.
 distinguishing characters of breeds, (28) 673.
 egg-laying cycles, (37) 869.
 eggs, sexual differentiation, (33) 272.
 fantail, inheritance in, (40) 275.
 growth of, (30) 467.
 Haemoproteus infection in, (34) 855.
 healthy and sick, blood cells of, (31) 586.
 inheritance in, (26) 272; (28) 270; (33) 371.
 inheritance of color in, (31) 572.
 magpie, notes, (28) 774.
 management, (33) 872; (40) 177.
 morphology of blood, (28) 777.
 raising in Russia, (26) 693.
 raising, notes, (27) 174.
 serum proteins of, (32) 861.
 sex control in, (33) 272; (35) 771; (37) 868.
 sex ratios in, (33) 369.
 sex-linked inheritance in, (27) 573.
 textbook, (30) 696.
 treatise, (26) 270; (31) 76; (32) 265; (33) 173.

Pigmentation—*see also* Anthocyanin, Color, and Plant pigments.
 dark, in domestic animals, studies, (26) 472.
 in animals, studies, (29) 466; (32) 360.
 fowls, relation to egg production, (38) 276.
 fowls, studies, (38) 171.
 guinea pigs, (40) 177.
 mammals and birds, (32) 766.
 Pigments—
 animal and plant, relationship, (31) 273.
 anthocyan, review of literature, (34) 335.
 blue, origin in flowers, (29) 434.
 distribution in seed coat of cowpeas, (27) 632.
 effect on linseed oil, (28) 714.
 floral, chemistry of, (29) 434.
 flower, of *Antirrhinum majus*, (32) 202, 203, 220.
 formation, (30) 708.
 formation in plants, (27) 632; (29) 219; (32) 523, 524, 824; (33) 329; (34) 223; (37) 632.
 formation, post-mortem, in eye of white ring-dove, (40) 665.
 hair, physiological character, (32) 361.
 of chromoleucites, studies, (34) 33.
 Fusarium, (32) 428.
 human milk fat, (31) 275.
 plastids, transformation in plants, (36) 730.
 plant—
 and animal, bibliography, (32) 18.
 chemistry of, (33) 802.
 classification, (30) 129.
 notes, (31) 728.
 relation to milk fat pigments, (31) 273.
 review of investigations, (34) 33.
 studies, (31) 128.
 red, of tomatoes, (32) 203.
 respiration, rôle in plants, (27) 426, 632.
Pigmeophorus americanus, parasitic on horn flies, (26) 252.
Pigmy hippopotamus, domestication, (30) 672.
 Piggins, *see* Pig houses.
 Pigs—*see also* Pork, Sows, and Swine.
 abnormal digits in, (27) 369.
 alfalfa pasture for, (31) 470; (33) 379, 871.
 ammonium salts and urea for, (31) 266.
 anatomy and histology of liver, (28) 783.
 animal parasites of, (29) 82.
 ante-mortem inspection, (34) 280.
 apple pomace and cider apples for, (39) 269.
 as affected by
 china berries, (27) 583.
 cottonseed meal, (34) 79; (35) 682.
 excessive wheat feeding, (34) 865.
 feeding stuffs, (32) 365.
 rice meal, (36) 83.
 smutty feeds, (26) 888.
 vegetable diet, (34) 400.
 atavism of coloration in, (31) 765.
 attenuation of virus in blood, (27) 786.
 automatic feeder v. common trough for, (31) 568.
 bacillary pest, typhus, or paratyphus of, (33) 680.
 bacon type, breeding and feeding, (35) 376.
 bacon type, notes, (28) 874.
 bacon type, raising, (29) 773.
 bacterial flora of buccal cavity, (34) 279.
 banana meal for, (29) 572.
 Berkshire, body, heart, and lung weights, (30) 871.
 blood and body temperature as affected by exercise and sun's heat, (37) 381.
 blood meal for, (36) 369.
 blood, morphology, (37) 380, 381.
 bones, as affected by domestication, (35) 376.
 brains of, (31) 168.
 breeding, (27) 875; (32) 569.
 breeding—
 age as factor in (35) 868.
 and care, (33) 71, 74; (36) 472.
 crate for, (39) 577.
 experiments, (28) 574; (31) 567; (32) 466; (35) 869; (39) 176.
 in Alaska, (29) 771.
 Denmark, (38) 169.
 Philippines, (30) 869.
 Sao Paulo, (29) 368.
 management, (33) 74.
 breeds, (36) 769.
 breeds and types, (32) 771.
 breeds for pork production, (33) 470.
 British breeds, (29) 571.

Pigs—Continued.
 buckeye poisoning, (40) 778.
 cactus for, (33) 70.
 Caesarian section for, (25) 587.
 calcium chloride for, (30) 67.
 calcium retention by, (29) 66.
 care and management, (31) 568, 769; (32) 171, 569, 771, 868; (34) 680; (38) 169.
 care in the South, (26) 95.
 castor bean poisoning, (28) 80.
 castration, (36) 482.
 cattle, and sheep, handbook, (28) 769.
 color inheritance in, (31) 567.
 composition of milk, (40) 775.
 cooking food for, (29) 371.
 corn and alfalfa pasture for, (31) 828.
 corn substitutes for, (40) 668.
 corn supplements for, (38) 274.
 correlation between number of mammae and size of litter, (31) 765.
 cost of production, (34) 374; (37) 680.
 cost to weaning time, (39) 373.
 cottonseed meal—
 fed, copperas for, (31) 578.
 for, (38) 282; (39) 373, 478; (40) 278.
 poisoning, (26) 780; (29) 75, 76; (39) 174.
 cottonseed poisoning, (39) 886.
 creatinin excretion, (26) 364; (27) 173.
 crossbreeding experiments, (32) 767.
 crude oil for, (37) 882.
 destruction by ants, (26) 483.
 determination of race, (34) 769.
 development of ascarid larvae in, (39) 587, 681.
 development of limbs, (34) 564.
 digestion experiments, (30) 565; (31) 667; (32) 70, 866; (33) 758; (37) 677, 678; (38) 675.
 disease, new, in Argentina, (40) 683.
 diseases, handbook, (40) 88, 783.
 diseases, treatise, (38) 781.
 dried yeast for, (33) 467.
 early maturity in, (26) 472.
 effect of age on gains, (38) 774.
 effect of exercise on internal organs, (28) 272.
 embryology of, (29) 371.
 European, ancestry, (26) 769.
 experimental studies, (27) 172.
 extracting fat samples from, (39) 674.
 factors affecting endogenous metabolism of, (30) 268.
 factors affecting pulse rate, (29) 66.
 fall, raising, (37) 270.
 fasting experiments, (30) 672.
 fattening with automatic feeders, (29) 671.
 fatty acids for, (39) 271.
 fecundity in, (28) 570, 574.
 feed requirements, (26) 770.
 feeding, (26) 164, 268; (28) 770, 874; (33) 71, 74, 172, 379, 470; (40) 177.
 feeding—
 and care, (33) 762; (35) 569.
 and management, (33) 172; (39) 274.
 contest in Canada, (33) 697.
 establishment, cooperative, in Germany, (29) 69.
 experiments, (26) 167, 469, 477, 571, 667, 668, 769, 874; (27) 278, 279, 372, 373, 470, 570, 571, 772, 872, 874, 875; (28) 73, 171, 268, 364, 366, 372, 468, 469, 573, 574, 669, 770, 771, 872; (29) 170, 272, 367, 370, 371, 468, 470, 572, 573, 668, 670, 671, 769, 772, 773, 872, 873; (30) 69, 174, 269, 371, 373, 470, 568, 569, 571, 770, 771, 868, 871; (31) 168, 169, 468, 470, 471, 568, 667, 769, 869; (32) 69, 71, 170, 260, 362, 366, 461, 464, 469, 569, 768, 862, 867; (33) 73, 74, 171, 266, 375, 376, 379, 380, 462, 470, 571, 670, 760, 871; (34) 74, 172, 265, 373, 376, 468, 469, 567, 663, 666, 668, 767, 768, 769, 869; (35) 168, 171, 272, 376, 478, 562, 653, 668, 672, 773, 869, 870; (36) 68, 168, 170, 171, 269, 370, 471, 472, 558, 767, 768, 866, 867, 868, 869; (37) 67, 68, 69, 268, 269, 270, 367, 678, 679, 768, 866; (38) 66, 69, 70, 168, 270, 274, 369, 370, 372, 472, 473, 475, 576, 672, 674, 675, 771, 774, 874, 875; (39) 174, 272, 372, 373, 375, 474, 477, 478, 575, 577, 674, 776, 777, 778, 779, 878, 880; (40) 72, 75, 278, 371, 668, 771.
 experiments, probable error in, (28) 268; (33) 871.
 in dry lot, (38) 698.

Pigs—Continued.

fermentation products of stomach and intestines, (30) 670.
 fertility in relation to size, (35) 273.
 fish meal for, (29) 270; (31) 563; (33) 169; (35) 770.
 following calves, (39) 169, 171.
 following cattle, (31) 468.
 following cottonseed meal-fed steers, (34) 866.
 forage crop rotations for, (33) 266.
 forage crops for, (27) 571; (34) 172; (35) 869.
 fundus glands of stomach, (27) 571.
 garbage feeding, (38) 274; (40) 279, 778.
 garbage tankage or "stick" for, (34) 173.
 grain ration for, (40) 574.
 grape marc for, (32) 567.
 grazing, (39) 173.
 grazing—
 crops for, (31) 169; (39) 173, 777.
 experiments, (32) 224; (35) 567, 672; (37) 66; (38) 68, 169; (39) 173, 272, 372, 375, 479, 577, 777, 778, 878; (40) 72, 75, 371, 471, 472, 771.
 in the South, (39) 479.
 on alfalfa, (33) 429; (36) 133.
 on corn, (39) 173, 778, 779, 878.
 on fodder crops, (38) 470.
 on irrigated lands, (37) 678.
 growing, creatin metabolism in, (28) 269.
 growing, nutrition as affected by quantity of protein consumed, (32) 71, 72, 73.
 growth as affected by proteins and ash constituents, (28) 98.
 growth as affected by rations, (33) 375.
 growth of, (30) 370, 467.
 growth on rations from single plant sources, (33) 367.
 growth on restricted rations, (33) 69.
 hairless, (37) 278; (39) 187, 790; (40) 185.
 harvesting crops with, (33) 871.
 hematology of, (32) 582.
 hippuric acid formation in, (32) 262.
 hogging-off corn, (40) 471, 771.
 illustrated lecture on, (31) 694.
 immunization against—
 anthrax, (31) 82.
 cholera, (27) 683, 786; (31) 585.
 erysipelas, (26) 587.
 hog cholera, (28) 82, 285, 289, 383.
 swine plague, (26) 184, 289; (28) 285.
 Voldagsen plague, (32) 378.
 immunization certificates for, (38) 179.
 improved German, fecundity, (38) 65.
 improvement, (37) 768.
 improvement, value of good sires, (37) 866.
 in Germany, (33) 296, 668.
 Kongo, (31) 865.
 Mexico, (32) 771.
 Philippines, (26) 666.
 United States, (31) 73, 167.
 inbreeding experiments, (39) 176.
 individual, self-balanced rations, (40) 770, 771.
 infection with avian tuberculosis, (26) 583.
 infection with flukes, (38) 82.
 inheritance—
 in, (38) 675.
 of color in, (30) 69.
 fertility in, (34) 400.
 mammary in, (28) 570, 574; (29) 470; (38) 65.
 rudimentary mammary in, (33) 470.
 internal parasites of, (31) 286; (33) 278; (34) 680.
 intestinal flora as affected by rations, (38) 875.
 intracutaneous tuberculin reaction with, (26) 180.
 irrigated crops for, (36) 767.
 judging, (33) 71; (34) 94; (37) 94; (38) 398.
 kidney worm infestation of, (30) 384; (32) 479.
 killing and dressing, (38) 476.
 killing, scalding, and dressing, (28) 466.
 labor requirements, (36) 790.
 Large Black, origin and characteristics, (26) 165.
 Large White English, manual, (36) 371.
 Large White Yorkshire, (33) 672.
 lessons on, (27) 394.
 liver lipoids, chemistry of, (31) 577.
 localization of pigment in, (27) 369.
 maintenance requirements, (26) 665; (29) 772.
 malnutrition in, (34) 567.
 management, (27) 278; (28) 73; (30) 395; (35) 78.
 management on a small holding, (30) 90.

Pigs—Continued.

manual, (26) 165.
 marketing in the South, (37) 391.
 maturation of ovum in, (38) 65.
 measurements, (28) 571, 667, 767.
 melting point of fat as affected by feeding, (39) 374; (40) 772.
 melting point of fats, (39) 175.
 metabolism cage for, (27) 173; (33) 380.
 metabolism experiments, (26) 359; (30) 99, 570, 568; (31) 268; (32) 170; (33) 375, 465.
 milo maize for, (39) 174.
 mineral mixture for, (34) 173.
 mineral requirements, (40) 371.
 minimum energy requirement, (28) 469.
 mixed bacterial diseases of, (38) 588.
 mortality in, causes, (26) 288.
 new born, weights, (32) 862.
 nitrate of soda for, (31) 265.
 nuclein metabolism, (26) 363.
 nutrition studies, (27) 172.
 nutritive requirements, (37) 264.
 occurrence of abscesses in, (26) 483.
 oestrus and ovulation in, (37) 867.
 of Catanduanes Islands, (27) 771.
 Guam, (30) 69.
 Sardinia and Corsica, (26) 168.
 Tunis, description, (27) 571.
 oil cakes for, (38) 572.
 on Para grass pasture, (40) 366.
 origin and distribution, (31) 564.
 paralysis in, (26) 185; (36) 85.
 parasites of, (35) 878; (36) 85.
 parathyroid glands of, (29) 377.
 partial thyroidectomy in, (37) 278.
 pasture and grain crops for, (30) 771; (31) 470.
 pasture crops for, (30) 697; (35) 478.
 pastures and forages for, (29) 471.
 pasturing v. dry lot feeding, (30) 771.
 paunch contents of freshly slaughtered animals for, (33) 672.
 peanut meal for, (39) 577, 778; (40) 278, 279.
 peanut pasture for, (39) 373; (40) 667.
 peanuts for, (39) 174, 674.
 phosphate rock or ground bone for, (40) 772.
 pigment specks in, (34) 766.
 poisoning by mangels, (27) 780.
 poisoning by tent caterpillar, (40) 586.
 prenatal growth of, (26) 167.
 production, program for, (38) 672.
 profits and losses in, (34) 869.
 protein metabolism, (27) 173.
 purebred v. crossbred, (31) 568.
 raising, *see also* Pig industry.
 raising, (29) 573; (33) 98; (39) 576.
 raising—
 community organization in, (36) 192.
 in Alaska, (39) 168.
 Canada, (33) 93.
 China and Siberia, (26) 258.
 Colorado, (39) 274.
 Florida, (38) 575.
 Germany, (27) 71.
 Holland, (35) 273.
 Maine, (37) 680.
 Montana, (34) 174.
 Nebraska, (39) 73.
 New Jersey, (26) 587; (38) 576.
 North Dakota, (34) 267; (40) 75.
 Southeastern States, (39) 779.
 Texas, (29) 773.
 the South, (32) 570; (39) 479, 779.
 the West, (40) 177.
 on North Platte reclamation project, (34) 267.
 school lessons on, (39) 298.
 treatise, (34) 268.
 rape pasture for, (34) 174.
 ratio of sexes in, (38) 65.
 rations for, (30) 169.
 raw v. cooked milk for, (28) 775.
 refuse brewers' yeast for, (33) 568.
 remains of, from Friesian mounds, (26) 769.
 reproductive organs, (27) 369.
 resistance to hog cholera virus, (34) 173.
 respiration calorimeter for, (28) 463.
 rice by-products for, (39) 174, 478, 674.
 rice meal for, (36) 180.
 rotation of blood plasma and serum in, (29) 881.
 rotation of crops for, (37) 572.

Pigs—Continued.

- roundworms affecting, (28) 285.
 - rutting period in, (26) 768.
 - salt poisoning in, (39) 680.
 - Sapphire, notes, (31) 870.
 - sarcosporidia in, (28) 885.
 - selection and feeding, (29) 69.
 - self-feeders for, (32) 99, 262; (35) 773; (37) 69, 90; (38) 475; (39) 174, 372, 478, 776, 777; (40) 73, 75, 770.
 - self-feeding v. hand-feeding, (36) 472, 868.
 - Siska, studies, (26) 368.
 - skim milk and potatoes for, (31) 75.
 - skim milk for, (40) 76.
 - slaughter tests, (27) 470.
 - slaughter tests at Smithfield Show, (31) 565.
 - slaughter weights, (30) 174.
 - slaughtering on the farm, (35) 317.
 - slaughtering operations in the West, (26) 571.
 - soft, hardening, (39) 174, 374.
 - soiling v. pasturing, (34) 265.
 - sore mouth disease in, (31) 880.
 - sorghum grains for, (39) 71, 174.
 - soy bean pasture for, (39) 373, 375, 474.
 - spleen, bacterial content, (39) 389.
 - structure and growth of pancreas, (32) 378.
 - suckling, immunity to hog cholera, (37) 881.
 - sugar for, (33) 467.
 - susceptibility to blackleg, (31) 585.
 - susceptibility to tuberculosis, (26) 178.
 - test of breeds, (31) 470.
 - textbook, (31) 470; (33) 791.
 - treatise, (26) 668; (27) 470; (29) 872; (31) 769; (32) 262; (37) 769.
 - tubercular, pathological changes in organs of, (31) 777.
 - tuberculin reaction in, (33) 877.
 - tuberculin tests, (29) 499.
 - uniform classification for fairs, (33) 697.
 - unit characters in, (28) 574.
 - use of food by, (34) 400.
 - utilization of phytin phosphorus, (39) 675.
 - velvet bean meal for, (40) 279.
 - velvet beans for, (40) 76.
 - viability of cysticerci in, (29) 482.
 - whey for, (26) 779.
 - wild and domestic, of Laibach moor, (30) 871.
 - worms infesting, (27) 181; (37) 779.
 - Yorkshire, gestation period, (34) 373.
- Pigweed—**
- analyses, (32) 169.
 - eradication, (34) 228.
 - rough, analyses, (34) 39.
 - seed, analyses, (39) 502.
 - water requirement, (32) 127.
 - western, geographical distribution, (26) 335.
- Pilacre petersii**, notes, (36) 851.
- Piles—**
- creosoted, notes, (27) 348.
 - overhead, prolonging life of, (30) 47.
 - preservation, (31) 241; (33) 544.
- Pilobolus—**
- crystallinus, spotting of roses by, (31) 641.
 - response to light, (40) 519.
- Pilocarpin**, effect on milk secretion, (28) 175.
- Pilocrocis tripunctata—**
- notes, (40) 259.
 - studies, (38) 465.
- Pilophorus walshii**, notes, (40) 165.
- Pimenta acris**, culture experiments, (38) 542.
- Pimento disease**, notes, (39) 849.
- Pimento**, insects affecting, (38) 459.
- Pimenton—**
- ether extract of, (26) 99.
 - origin and composition, (29) 264.
- Pimpla—see** *Itopectis conquisitor*.
- instigator**, oviposition and parthenogenesis in, (30) 362.
- instigator**, parasitic on gypsy moth, (31) 652.
- maculator**, notes, (26) 151.
- maculator**, parasitic on alfalfa weevil, (31) 61.
- pedalis**, notes, (28) 755.
- pomorum**, notes, (29) 562.
- pomorum**, studies, (40) 65.
- portheirae** n.sp., description, (26) 352.
- robomotor**, notes, (32) 151.
- robomotor**, studies, (40) 857.
- sp.**, studies, (26) 458.
- spp.** in Europe, (34) 657.
- spp.**, notes, (27) 558, 559; (29) 256.
- Pimplides** in British Museum, revision, (31) 656.

Pin-hole borers—

- injurious to sal, (36) 360.
 - notes, (32) 552.
 - studies, (31) 852.
- Pinacynanol and pinaverdol**, synthesis, (40) 711.
- Pinarids of Senegal**, (27) 456.
- Pinaverdol**, synthesis, (40) 711.
- Pine—see also** *Pines* and *Pinus*.
- aphids, woolly, notes, (26) 856.
 - bark aphid, notes, (28) 353; (30) 657.
 - bark beetle, studies, (36) 554.
 - bark borer, notes, (30) 657.
 - barren vegetation in New Jersey, (36) 539.
 - beetle, large brown, studies, (30) 856.
 - beetle, notes, (26) 561.
 - beetle, southern, notes, (26) 456; (27) 59.
 - blight, notes, (30) 849.
 - blister rust—*see also* White pine blister rust.
 - alternate hosts, (36) 517.
 - control in Canada, (38) 646.
 - control in Massachusetts, (36) 843; (37) 646.
 - control in Minnesota, (36) 652.
 - control in New York, (37) 846.
 - control in United States and Canada, (38) 254.
 - control in Vermont, (34) 837; (36) 539.
 - control of Ribes generation of, (31) 451.
 - diagnosis, (38) 355.
 - dissemination by gypsy moth larvae, (38) 860.
 - early discovery in United States, (38) 254.
 - in Canada, (37) 558; (38) 758.
 - Maine, (37) 244.
 - Massachusetts, (36) 454; (38) 651.
 - Minnesota, (38) 155.
 - New York, (36) 53.
 - Ontario, (36) 353, 454; (37) 155; (38) 652.
 - inoculation experiments, (38) 151.
 - introduction into the West, (40) 54.
 - law in New Hampshire, (37) 547.
 - notes, (30) 653, 746; (31) 247, 348, 647; (33) 351; (35) 551; (36) 145, 150, 548; (37) 253, 458, 658, 757; (38) 53, 355, 455.
 - notes and treatment, (29) 249.
 - outbreaks in United States, (35) 251.
 - overwintering, (37) 658, 845, 846; (38) 249.
 - quarantine in United States, (36) 245.
 - studies, (34) 750; (38) 254.
 - threatening Pacific States, (34) 354.
 - treatment, (31) 50.
 - western, (39) 858.
 - wintering on currants, (36) 353, 652.
- borer**, bayonet or post-horn, notes, (36) 856.
- chips**, extracted, pulping, (38) 809.
- cone beetles**, notes, (33) 458.
- cones**, collection, (33) 645.
- cones**, insects affecting, (31) 849.
- cross-arms**, tests, (27) 443.
- diseases**, studies, (33) 448.
- diseases**, notes, (26) 844, 852; (30) 647; (31) 841.
- dry rot**, studies, (31) 547.
- forest soils**, nitrification studies, (40) 418.
- forests**, effect on accumulation and melting of snow, (33) 318.
- forests of Brazil**, (40) 745.
- forests**, swamping, in northern Sweden, (27) 121.
- growth** in relation to altitude, (40) 129.
- heart rot**, notes, (28) 241.
- humus**, effect on plant growth, (32) 618.
- lands**, clearing, (28) 289.
- leaf cast** in Sweden, (32) 845.
- leaf cast**, studies, (26) 651.
- leaf mold**, fertilizing value, (29) 622.
- leaf scale**, notes, (28) 353; (34) 752.
- leaves**, internal temperature in winter, (32) 639.
- midge**, gouty, notes, (29) 656.
- moth**, destructive, from Europe, (32) 251.
- moth** in Bohemia, (33) 748.
- moth**, Zimmerman, studies, (34) 159.
- needle cast**, notes, (37) 458.
- needle diseases**, notes, (30) 544.
- needle rust**, occurrence in Vermont, (38) 253.
- needles—**
- and straw, analyses, (30) 127.
 - as feeding stuff, (28) 768.
 - composition and digestibility, (35) 474.
 - decomposition in soil, (40) 214.
 - digestibility, (28) 464.
 - significance and history, (40) 819.
- nursery stock**, growth and mortality, (38) 847.
- nuts**, microscopic identification, (28) 565.

Pine—Continued.

- oil, chemistry of, (33) 19.
 - oil, insecticidal value, (34) 359.
 - reproduction as affected by bear clover, (40) 842.
 - resin, effect on soils, (36) 513.
 - root disease, studies, (27) 854.
 - rust, European, in Wisconsin, (30) 653.
 - rust, overwintering on currants, (31) 54.
 - rust, treatment, (34) 650.
 - rusts in Sweden, (33) 846.
 - rusts, new species, (30) 30.
 - rusts, notes, (29) 547; (31) 641; (40) 349, 645.
 - rusts, studies, (31) 153; (39) 859.
 - sawfly, European, *see* Diprion simile.
 - scale in Argentina, (39) 560.
 - seed—
 - as affected by source, (29) 544.
 - beds, disinfection, (33) 250.
 - beds, fungus flora, (40) 852.
 - collection, (29) 444.
 - destruction by squirrels, (31) 154.
 - factors affecting germination, (26) 543.
 - germination as affected by chemicals, (28) 843.
 - germination tests, (27) 444; (38) 447.
 - improvement of quality, (29) 343.
 - selection and extraction, (28) 440.
 - testing, (27) 243; (29) 44; (35) 543.
 - seedling disease, notes, (37) 458.
 - seedlings—
 - absorption of fertilizers by, (26) 443.
 - as affected by shade and moisture, (39) 751.
 - damping-off, (27) 655; (31) 647; (32) 647; (33) 551; (39) 254.
 - drought resistance in, (38) 44.
 - evaporation studies, (31) 824.
 - fertilizer experiments, (32) 47.
 - from dissimilar habitats, (32) 339.
 - growth, (38) 144.
 - root rot of, (34) 546.
 - transpiration and composition, (32) 824.
 - transpiration in, (33) 224.
 - white, development in nursery beds, (31) 640.
 - white spot injury, (40) 53.
 - shoot disease, (32) 845.
 - shoot moth, European—
 - in New Jersey, (34) 355.
 - notes, (34) 752; (36) 854.
 - studies, (32) 654.
 - shoot moth, notes, (33) 58.
 - siskin, destruction of grain aphids by, (29) 452.
 - sleepers, antiseptic treatment, (27) 542.
 - spinner, studies, (35) 759.
 - spray, analyses, (33) 735.
 - stands—
 - effect on soil physics, (26) 140.
 - regenerating, (29) 240.
 - stem height in, (31) 538.
 - succession by oak stands, (34) 537.
 - stem canker, notes, (29) 547.
 - timber, Indian, contraction and warping, (38) 751.
 - tip moth, notes, (37) 255.
 - tipburn, notes, (36) 52.
 - twig borer, notes, (36) 856; (40) 652.
 - unit stresses for, (36) 91.
 - weevil, notes, (32) 852; (33) 252; (34) 158; (36) 856; (38) 459.
 - weevil, remedies, (35) 54; (36) 859.
 - weevil, spotted, notes, (26) 147.
 - western red rot, studies, (35) 655; (36) 753.
 - wood, carbohydrates of, (34) 608.
 - wood, *Coniophora cerebella* on, (39) 553.
 - wood, formation of *tore* in, (28) 826.
 - wood, production of turpentine from, (26) 413.
 - yellow, analyses, (38) 309.
 - yellow, durability, (37) 727.
 - yield graphs, (39) 352.
- Pineal gland, physiological function, (29) 168.
- Pineapple—
- canning industry of the world, (33) 594.
 - chlorosis—
 - cause and treatment, (26) 121.
 - notes, (27) 129.
 - relation to calcareous soils, (29) 623.
 - treatment, (36) 545.
 - disease, new, in Philippines, (38) 853.
 - fruit fly, danger of introduction, (39) 467.
 - fungus, notes, (39) 849.

Pineapple—Continued.

- fungus on coconut, (40) 751.
 - industry in Porto Rico, (32) 745.
 - juice, ferments of, (35) 713.
 - juice, osmotic pressure, (28) 262.
 - juice, preparation, (33) 316.
 - Kanai wilt, investigations, (37) 155.
 - Phytophthora disease, notes, (39) 849.
 - rots, notes, (31) 844.
 - scale, notes, (28) 854.
 - seedlings, growing, (37) 142.
 - seeds, germination, (37) 142.
 - vinegar, manufacture, (30) 813.
 - weevil, new, in Jamaica, (37) 161, 162.
 - weevil, notes, (38) 163; (40) 259.
 - wilt, studies, (37) 652.
 - wilt, treatment, (37) 550.
 - yellows, notes, (37) 155.
 - yellows, treatment, (36) 850.
- Pineapples—
- analyses and use, (30) 363.
 - as affected by manganese, (27) 842; (36) 538
 - as affected by shade, (33) 535.
 - breeding experiments, (30) 838; (32) 742.
 - canned, keeping in open tins, (39) 317.
 - cold storage of, (32) 439.
 - composition and fertilizing requirements, (40) 446.
 - composition at different stages, (27) 842.
 - cover crops for, (31) 635; (33) 535; (34) 736.
 - culture, (28) 437; (31) 494; (35) 542.
 - culture—
 - experiments, (28) 142; (33) 737.
 - in Burma, (29) 736.
 - Hawaii, (28) 48.
 - Philippines, (34) 635.
 - decay in transit, (32) 745.
 - fertilizer experiments, (30) 525; (38) 748.
 - fumigation experiments, (27) 841.
 - function of manganese in, (27) 129.
 - green manure experiments, (37) 144.
 - growth on calcareous soils, (31) 627, 816.
 - improvement, (37) 142.
 - insects affecting, (27) 453; (28) 49; (38) 459.
 - lime-magnesia requirements, (29) 520.
 - packing, shipping, and marketing, (28) 743.
 - peptolytic enzymes in, (32) 130.
 - phosphorus content, (27) 461.
 - plant-food requirements, (27) 217.
 - Porto Rican, handling, (32) 745.
 - seedling, growing, (38) 841.
 - varieties, (30) 525; (33) 737; (36) 340; (38) 842.
- Pine, therapeutic value, (38) 585.
- Pines—
- accretion in lower part of stems, (31) 538.
 - Arizona yellow, growth and density of stand, (37) 837.
 - as affected by—
 - origin and germinative power of seed, (27) 148.
 - smelter gases, (27) 154.
 - smoke, (31) 321, 730.
 - soot, (31) 827.
 - Australian, borer injury, (40) 860.
 - Austrian, individual selection experiments, (29) 442.
 - black, color variation in seed, (32) 144.
 - black, silvicultural management, (32) 48.
 - cost of growing, (26) 49.
 - Cuban and longleaf, oils of, (33) 18.
 - culture experiments, (33) 542.
 - culture in Nordland, (33) 542.
 - diameter growth in, (34) 536.
 - dying in Southern States, (26) 456.
 - East Indian, wood structure, (30) 46.
 - evaporation from, (34) 537.
 - fertilizer experiments, (34) 537.
 - growing with spruce and beech, (27) 542.
 - growth on sand dunes, (27) 217.
 - height growth as affected by weather, (34) 640.
 - identification of species, (36) 144.
 - insects affecting, (28) 750; (30) 249; (36) 853.
 - insignis or Monterey, disease, (39) 653.
 - jack, diseases of, (33) 351.
 - jack, pulpwood from, (27) 541.
 - Jeffrey, injury by pack rat, (38) 53.
 - larch canker affecting, (30) 248.
 - leaf and twig oils of, (33) 409.
 - loblolly, forest management, (30) 446.
 - loblolly, of North Carolina, (33) 844.

Pines—Continued.

- lodgepole—
 - for telephone poles, (30) 843.
 - in Rocky Mountains, (32) 542.
 - reproduction, (26) 843.
 - seed behavior, (37) 244.
 - transplanting, (38) 44.
 - utilization and management, (33) 443.
 - volume table for, (31) 743.
- longevity and yield as affected by depth of planting, (29) 842.
- longleaf—
 - conversion into paper pulp, (30) 615.
 - creosoting, (39) 394.
 - density and porosity, (32) 47.
 - distinguishing from other pines, (33) 844.
 - fiber dimension studies, (35) 734.
 - paper pulp from, (31) 144.
 - reproduction, (32) 237.
 - reproduction following fire, (39) 51.
 - volume tables for, (35) 748.
 - yellow, utilization of waste, (34) 839.
- management in Saxony, (29) 342.
- maritime, introduction into Florida, (28) 543.
- maritime, tumors of, (40) 159.
- Monterey, notes, (33) 739.
- mountain, culture experiments, (26) 443.
- mountain, in eastern central Alps, (32) 237.
- natural and artificial regeneration, (31) 537.
- Norrlund, diseases of, (28) 750.
- North American, distribution, (29) 149.
- Norway, in Lake States, (32) 339.
- of Rocky Mountain region, (37) 346.
- of Sweden, computation tables, (26) 140.
- of United States, (26) 50.
- piñon, management in New Mexico, (38) 644.
- pitch, characteristics and distribution, (37) 837.
- pitch, disease decaying sapwood, (39) 153.
- primary type and cubical content, (26) 338.
- red, growth measurements, (29) 343.
- reproduction on polar forest border, (29) 442.
- Scotch—
 - absolute form quotient, (39) 247.
 - as affected by source of seed, (28) 440; (29) 841.
 - individual selection experiments, (29) 441.
 - leaf cast, notes, (28) 652.
 - planting in Pennsylvania, (38) 847.
 - seed from various sources, value, (26) 49.
 - volume table, (39) 451.
 - weevil injury, (39) 159.
- screw, of Philippines, (33) 433.
- scrub, fungus diseases of, (31) 348.
- selection-strip method of cutting, (29) 240.
- shortleaf—
 - importance and management, (34) 346.
 - in Virginia, (30) 534.
 - life history, (33) 443.
- Siberian, distribution and importance, (29) 442.
- site in relation to height and volume, (35) 43.
- slash, distribution and value, (36) 144.
- slash, notes, (36) 345.
- smoke-injured, microscopic analysis, (26) 532.
- southern—
 - correlation of strength and durability, (39) 51.
 - reproduction, (39) 450.
 - utilization of waste, (33) 615.
- spur shoot of, (31) 522.
- stand of in relation to soil moisture, (33) 816.
- sugar, in California, (36) 745.
- sugar, studies, (36) 447.
- Swedish, notes, (38) 447.
- volume and value accretion in, (29) 747.
- western—
 - as source of naval stores, (28) 146.
 - oleoresins of, (28) 512.
 - soft, habits and use, (35) 241.
 - turpentine production from, (31) 744.
 - white, marking rules in Idaho, (38) 46.
 - white, second-growth, source of seed, (38) 145.
 - white, seed production, (33) 144.
- western yellow—
 - as affected by grazing, (38) 447.
 - culture in Black Hills, (34) 640.
 - growth in pure and composite stands, (29) 43.
 - in Oregon, (36) 645.
 - mill scale study, (34) 838.

Pines—Continued.

- western yellow—continued.
 - mill tally, (37) 451.
 - needle disease of, (35) 354.
 - planting, (29) 544; (39) 51.
 - relation to spring rainfall, (39) 847.
 - reproduction as affected by grazing, (40) 343.
 - seed production in, (26) 543.
 - studies, (26) 240.
 - test of seed from different sources, (28) 543.
 - tests, (37) 89.
 - volume tables for, (34) 641.
 - yield and reproduction in Arizona and New Mexico, (38) 847.
- white, see White pine.
- white-barked, description, (35) 745.
- yellow—
 - habitat extension, (29) 545.
 - handbook, (31) 444.
 - in California, (36) 745.
 - oil from, (31) 19.
 - reforestation, (29) 544.
 - relation between stand density and wood volume, (31) 743.
 - tests of strength, (29) 887.
 - windfall damage (34) 640.
 - yield tables, (26) 843; (27) 348.
 - young, dying about ant hills, (38) 651.
- Pinipestis—
 - erythropasa n.sp., description, (32) 850.
 - zimmermani, notes, (37) 255.
 - zimmermani, studies, (34) 159.
- Pink—
 - bollworm, see Cotton bollworm, pink.
 - bud rot, notes, (28) 750.
 - yeast, occurrence in sugar, (26) 505.
- Pinks—
 - and carnations, treatise, (27) 41.
 - garden, history, (32) 440.
 - handbook, (26) 139.
 - insects and diseases affecting, (35) 154.
- Pinnaepis buxi, notes, (28) 854.
- Piñon as source of naval stores, (28) 146.
- Piñon blister rust, studies, (39) 858.
- Pinus—see also Pine and Pines.
 - albicaulis, resinous tracheids, (39) 451.
 - betheli n.sp., description, (30) 538.
 - bungeana, descriptive notes, (35) 745.
 - characteristics and classification, (31) 743.
 - chondriosomes, (39) 332.
 - contorta, utilization and management, (33) 443.
 - echinata, life history, (33) 443.
 - excelsa as host of white pine blister rust, (31) 647.
 - excelsa, blister rust affecting, (31) 349.
 - insignis, potash content, (40) 321.
 - lambertiana, studies, (36) 447.
 - longifolia, silvicultural study, (35) 649.
 - longifolia timber, contraction and warping while seasoning, (38) 751.
 - montana, in eastern central Alps, (32) 237.
 - photomorphic shoots in, (30) 744.
 - pinex, Sphaeropsis necatrix on, (39) 859.
 - ponderosa—
 - as affected by mistletoe, (39) 57.
 - seed production in, (26) 543.
 - studies, (26) 240.
 - radiata, proliferation of spur shoots in, (31) 326.
 - rigida, growth studies, (28) 49.
 - sabiniana, economic possibilities, (26) 51.
 - spp., effect of moisture relations on, (30) 228.
 - spp., length of tracheids in, (33) 143.
 - spp., Razoumofskyia infection, (40) 253.
 - strobos, growth studies, (32) 840.
 - syvestris—
 - anomalies of growth in, (35) 755.
 - tube development in microspore, (40) 223.
 - witches' brooms affecting, (27) 253.
 - taeda belt of Atlantic coastal plain, (37) 435.
 - uncinata, culture experiments, (26) 443.
 - virginiana, fungus diseases of, (31) 348.
- Pioneer Irrigation District, drainage system for, (34) 483.
- Pionnotes capillacea n.sp., notes, (37) 148.
- Piophila casei, see Cheese skipper.
- Piophilidae, synopsis, (37) 665.
- Pipe—
 - drains, old, renovation, (31) 685.
 - lines, construction, (30) 188, 289.

Pipe—Continued.

- lines, efficiency, (28) 683.
- lines, metal, construction, (34) 483.
- Piper beetle, composition of leaves, (31) 108.
- Piper methysticum, insects affecting, (27) 453.
- Piperidin, nitrification as affected by lime, (38) 119.

Pipes—

- cement, for orchard irrigation, (30) 889.
- concrete, construction, (29) 487.
- concrete, for irrigation water, (29) 485.
- corrugated metal, tests, (35) 580; (37) 288.
- flow of water in, (29) 181, 290, 891; (30) 786.
- jointed concrete, tests, (30) 689.
- large, strength of, (31) 186.
- pressure, for water conveyance, (30) 187.
- reinforced concrete, tests, (30) 889; (31) 784; (32) 885.
- theory of loads on in ditches, (29) 685.
- water, loss of head in due to bend, (31) 384.
- wood-stave—
 - construction and use, (33) 886.
 - flow of water in, (36) 281.
 - frictional resistance in, (30) 885.
 - repairing with concrete, (34) 890.
 - specifications, (37) 487.
 - use, (31) 685.

Pipette—

- absorption, description, (40) 308.
- automatic, description, (36) 202.
- automatic suction attachment, (37) 503.
- capillary, description, (40) 286.
- for measurement of small volumes, (40) 806.
- for sampling milk and its products, (36) 805.
- for tubing culture media, (40) 12.
- holder, description, (36) 275; (40) 581.
- safety, new form, (38) 203.
- washing device, (38) 203, 803.

Pipiza—

- californica n.sp., description, (38) 863.
- pisticoides, notes, (36) 460.

Piptadenia peregrina, narcotic snuff from, (36) 734.

Pipunculidae of Virginia, (35) 259.

Pipunculids, life history, (33) 860.

Pipunculus—

- n.spp., descriptions, (34) 857.
- spp., parasitic on sugar beet leafhoppers, (33) 747.

Piricularia—

- n.spp., descriptions, (40) 156.
- oryzae, notes, (36) 846; (37) 838; (40) 845.
- studies, (40) 156.

Piroplasma—

- annulatum, notes, (34) 384.
- argentinum, notes, (27) 184.
- bigeminum—
 - and *P. divergens*, cross-immunization tests, (37) 687.
 - immunization, (26) 382.
 - in cows in Eritrea, (38) 888.
 - notes, (27) 182, 784.
 - stage of in cattle ticks, (35) 385.

caballi—

- in equine biliary fever in India, (32) 278.
- notes, (29) 83.
- relation to equine piroplasmiasis, (26) 177.
- canis, culture in vitro, (30) 481, 781.
- canis, distribution in infected dogs, (26) 486.
- divergens n.sp., description, (26) 683.
- gibsoni, notes, (28) 83.
- infection in healthy cattle, (30) 282.
- notes, (27) 181.
- ovis, occurrence in Dalmatia, (29) 482.
- spp. in cattle in Germany, (28) 82.
- spp., notes, (26) 173, 782.

Piroplasmiasis—

- bovine, *see* Texas fever.
- canine—
 - in Porto Rico, (31) 781.
 - notes, (27) 782; (28) 83.
 - notes and treatment, (26) 882.
 - of Europe and Africa, (30) 481.
 - studies, (27) 884.
 - treatment, (26) 889; (34) 276.
- equine—
 - in Algeria, (30) 282.
 - in Canal Zone, (29) 83, 483.
 - in Panama, (29) 682.
 - notes, (26) 384.
 - parasites of, (26) 177; (31) 382.
 - relation to biliary fever, (26) 887.

Piroplasmiasis—Continued.

- immunization, (31) 585.
 - in Barbados, (37) 483.
 - Brazil, (31) 85.
 - cattle in Italy, (40) 782.
 - cattle in Sweden, (40) 585.
 - domestic animals, treatment, (32) 273.
 - European cattle, (34) 82, 478, 575.
 - horses, camels, and hares, (30) 679.
 - Russian Turkestan, (37) 374.
 - sheep, (29) 81, 482; (33) 282.
 - solipeds in Transcaucasia, (29) 582.
 - Yucatan, (27) 782.
 - infection through mucous membranes of dogs, (29) 483.
 - marginal points in, (26) 173.
 - monograph, (30) 79.
 - notes, (36) 880.
 - parvum type, in cattle, (34) 383.
 - relapse in, (33) 281.
 - status and control, (37) 480.
 - transmission to pigs by ingestion, (37) 691.
 - treatment, (27) 184; (35) 379.
- Pissodes—
- notatus, notes, (26) 147; (28) 750.
 - strobi, notes, (26) 856; (28) 353; (33) 252; (34) 158; (36) 856; (38) 459.
 - strobi, remedies, (33) 58; (36) 859.
 - strobi, studies, (39) 159.
 - validirostris, notes, (31) 849.
- Pistaches, culture in southern Texas, (32) 539.
- Pistachio—
- biology and culture, (37) 746.
 - culture in Crimea, (37) 145.
 - leaf spot, notes, (34) 843; (37) 551.
 - nuts, microscopic identification, (28) 565.
- Pistol case-bearer, biology, (40) 757.
- Pisum—
- gametic reduplication in, (30) 433.
 - genetic factors, (38) 226.
 - inheritance studies, (40) 147, 225.
- sativum—
- as affected by light, (29) 526.
 - bacterial disease, (40) 844.
 - betains in, (27) 203.
 - relation of seed weight to mortality, (31) 35.
 - respiration in, (27) 523.
 - variations in, (30) 739.
- tropisms of hypocotyl, (39) 629.
- Pitanga, description and culture, (35) 144.
- Pitcairnia xanthocalyx, glycogen content, (27) 133.
- Pitches, specifications and definitions, (35) 888.
- Pith-ray flecks in wood, (29) 44.
- Pittosporum tobira variegatum, bud variation, (37) 546.
- Pituitary—
- body—
- active substances of, (30) 578.
 - composition and physiological activity, (36) 267.
 - extracts, effect on cows, (29) 578.
 - growth-controlling principle, (35) 8.
- extract—
- effect on growth of chickens, (32) 263.
 - effect on milk secretion, (31) 272; (32) 268, 871; (37) 272.
 - effect on resting ovary in fowls, (33) 472.
 - use in bovine and equine obstetrics, (30) 180.
- gland, feeding to white rats, (28) 370.
- substance, effect on—
- egg production and growth, (34) 75, 668.
 - growth, (36) 468.
 - growth and sexual development, (34) 765.
 - growth of white mice, (35) 865.
 - milk secretion, (30) 272.
- Pituitrin—
- effect on milk secretion, (34) 270.
 - in fetal pituitary and suprarenal glands, (34) 675.
 - pressor effect on, (29) 882.
- Pitymys savi, eradication, (36) 852.
- Pityogenes—
- bidentatus, notes, (31) 61.
 - hopkinsi, studies, (36) 659.
 - n.spp., descriptions, (36) 659.
- Pityokteines elegans n.sp., description, (35) 856.
- Pityophthorus n.spp., descriptions, (34) 361.
- Placenta—
- action of enzymes on, (40) 566.

Placenta—Continued.

- chemical composition, (37) 109.
- growth-promoting substance in, (40) 566.
- maternal, experimental production, (27) 174.
- Plaesius javanus*, notes, (35) 57.
- Plagia americana*, notes, (28) 253.
- Plagia trepida*, biology, (36) 858.
- Plagiodera versicolora*, notes, (37) 359; (40) 754.
- Plagiognathus politus*, relation to fire blight, (36) 351.
- Plagirolepis longipes*, studies, (35) 467; (38) 364.
- Plagionotus speciosus*, notes, (26) 147.
- Plague—
 - bubonic, in camels, (30) 784.
 - bubonic, paper on, (26) 245.
 - bubonic, transmission by rodents, (27) 754.
 - dissemination by rats, (34) 548.
 - eradication in cities, (27) 754.
 - eradication in Porto Rico, (29) 158.
 - flea of Siberia and Manchuria, notes, (26) 252.
 - human, in East Suffolk, England, (26) 461.
 - human, vaccine for, (37) 378.
 - in Hawaii, notes, (26) 854.
 - infection in domestic animals, (26) 280.
 - infection in rats, (27) 754.
 - investigations in India, (26) 653.
 - pneumonic, susceptibility of animals to, (28) 180.
 - relation to—
 - fleas, (27) 59, 754.
 - rodents, (34) 355; (40) 161.
 - tarbagans, (27) 454.
 - weasels, chipmunks, and pocket gophers, (26) 59.
 - transmission, (33) 456, 552.
- transmission—
 - among marmots, (37) 180, 878.
 - by bedbugs, (33) 747; (38) 559.
 - fleas, (26) 61; (33) 749.
 - insects, (29) 756.
 - tarbagans, (26) 653.
- Plane tree leaf scorch, notes, (32) 347.
- Planera aquatica*, culture for wild ducks, (33) 251.
- Plant drag for soils, (32) 789.

Plant—

- activities, relation to soil moisture, (27) 214.
- activities, relation to sun spots, (38) 114.
- alkaloids, synthesis of, (31) 409.
- alkaloids, treatise, (29) 503.
- anatomy, pathological, treatise, (36) 46.
- anatomy, treatise, (31) 728; (33) 724.
- and animal life, treatise, (28) 897.
- and animal tumors, comparison, (29) 548.
- antigens, hemagglutinating and precipitating capacity of, (26) 607.
- ashes as source of potash, (37) 427.
- ashes, composition, (39) 607.
- associations in western Pennsylvania, (38) 425.
- associations in wild hay meadow, (32) 329.
- associations, studies, (31) 35.
- bases, studies, (31) 309.
- bases, treatise, (31) 10.
- Biology Station in France, (28) 498.
- breeding—
 - and seed control, (40) 245.
 - applicability of pure-lime theory, (39) 573.
 - at Svalöf, Sweden, (31) 830.
 - at Tystofte, (30) 134.
 - bibliography, (28) 145.
 - color transmission in, (39) 734.
 - cooperative, in Wisconsin, (28) 593.
 - experiments, *see also special crops*.
 - experiments, (27) 343, 528, 734, 741; (31) 829.
- breeding experiments—
 - at Svalöf, Sweden, (30) 435.
 - control of stray pollen in, (38) 430.
 - error in, (30) 525; (39) 830, 831, 832.
 - personal equation in, (26) 734.
 - spacing in, (35) 437.
- breeding—
 - for disease resistance, (30) 331; (40) 344.
 - genetic and environmental factors in, (30) 329.
 - heterozygosis in, (27) 428; (29) 31.
 - in Canada, (34) 40.
 - Dahlem, (34) 727.
 - Europe, (27) 239.
 - Germany, (30) 525.
 - Germany, treatise, (26) 43.
 - Italy, (37) 827.

Plant—Continued.

- breeding—continued.
 - in North America, (27) 239.
 - Scandinavia, handbook, (29) 636.
 - Sweden, notes, (26) 839.
 - Uruguay, (39) 835.
 - instruction in, (28) 393.
 - methods, (27) 342; (39) 444.
 - notes, (28) 435.
 - physiological correlations and climatic reactions in, (31) 629.
 - plots, management, (29) 636.
 - plots, standing room of plants in, (30) 632.
 - principles of, (30) 732.
 - review of investigations, (38) 367.
 - review of literature, (28) 536; (29) 830.
 - rod-row tests, (38) 429.
 - selection in, (30) 732.
 - selection problem in, (38) 64.
 - station at University of Halle, (28) 736.
 - studies, (39) 746, 747.
 - teaching, (26) 162.
 - textbook, (39) 671; (40) 817.
 - theory of cryptomery, (29) 434.
 - theory of factors, (29) 433.
 - treatise, (26) 325; (28) 736; (31) 131; (32) 220, 425, 430, 822.
 - work of Luther Burbank, treatise, (32) 143.
- bug, tarnished, *see* Tarnished plant bug.
 - bugs, notes, (28) 752.
 - catalase, physiology of, (26) 803.
 - cell bodies and mitochondria, differentiation, (39) 730.
 - cell membranes, chemistry and structure, (34) 626.
 - cell reactions in relation to aphids, (32) 553.
 - cell substances, electric charge of, (34) 525.
- cells—
 - absorption of uranium by, (27) 826.
 - acidity, (37) 430.
 - as affected by electrolytes, (27) 732.
 - assimilation of nitrates in, (27) 332.
 - changes in during fermentation, (36) 802.
 - chondriosomes in, (29) 217.
 - chromosome number, (40) 817.
 - entrance of coloring matters into, (27) 632.
 - formation of starch in, (27) 133.
 - intake of material by, (34) 333.
 - labile albuminous body in, (36) 225.
 - metachromatin in, (40) 325.
 - mitochondria in, (40) 425, 818.
 - mutation in, (36) 222.
 - nitrogen assimilation in, (28) 428.
 - permeability, (29) 627, 628; (37) 128, 326, 431, 632.
 - permeability as affected by electrical stimulus, (36) 732.
 - permeability in relation to temperature and acidity, (35) 224.
 - physical-chemical analysis, (29) 408.
 - protein synthesis in, (28) 428.
 - protoplasm of, (34) 33.
 - reaction to plant lice, (33) 444.
 - reduction oxidation regions in, (34) 33.
 - reserve albuminous bodies in, (35) 332.
 - role in sap ascent, (27) 829; (34) 727.
 - role of chondriome in, (40) 223, 323.
 - size and shape, (39) 226.
 - size in relation to mutational characters, (40) 323.
 - synthesis, (27) 464.
 - turgescence and water absorption, (39) 731.
 - characteristics, relation to seed weight, (29) 522; (31) 824.
 - chemistry, progress in, (29) 408.
 - chimeras, notes, (32) 726; (33) 429; (40) 826.
 - chlorosis—
 - in nutrient solutions, (36) 633.
 - investigations, (28) 425.
 - notes, (34) 720.
 - relation to soil alkalinity, (30) 50.
 - chromosomes, *see* Chromosomes.
 - colloids, studies, (35) 501.
 - coloring matters, chemistry, (27) 310.
 - communities, ecological classification, (39) 28.
 - competition, studies, (40) 424.
 - constituents, humification, (35) 627; (38) 26, 27.
 - cover, relation to soil acidity, (27) 29.
 - culture, treatise, (35) 499.

Plant—Continued.

- cultures, nutrient solutions for, (31) 425; (34) 333.
- cuttings, transportation, (28) 837.
- development, rôle of reserve material in seeds, (26) 729; (30) 132.
- disease—
 - myceliums, staining in host tissue, (39) 247.
 - problems in relation to plant introduction, (40) 343.
 - survey, (27) 45; (34) 49.
- disease survey—
 - in Pennsylvania, (34) 154.
 - South Carolina, (32) 543.
 - Texas, (26) 645.
 - Wisconsin, (28) 844.
- work, relation of phytopathologists to, (39) 849; (40) 449.
- diseases—*see also Fungi and different host plants.*
 - and animal pests, treatise, (28) 752.
 - enemies in Switzerland, (40) 249.
 - immunity, (40) 344.
 - injuries in Rhine Province, (35) 243.
 - injuries in Selby smoke zone, (35) 244.
 - injuries, tropical, treatise, (32) 340.
 - pests, (39) 444.
 - pests in German colonies, (37) 148.
 - pests in Mauritius, (32) 46.
 - pests, law in Canada, (26) 51.
 - pests, treatise, (28) 745; (30) 745; (39) 444; (40) 543.
 - as affected by soil solutions, (26) 826.
 - as an economic study, (38) 349.
 - at Salgir Experiment Station, (34) 842.
 - bacterial, (26) 844.
 - bacterial, in British Isles, (40) 844.
 - bacterial, notes, (34) 49; (35) 328.
 - bibliography, (26) 445; (27) 543; (28) 155; (30) 147; (34) 348.
 - biochemistry of resistance, (40) 745.
 - classification and terminology, (34) 642.
 - common and scientific names, (37) 838.
 - control, (31) 541; (37) 141; (39) 453.
- diseases, control in—
 - Baden, (32) 145.
 - Egypt, (36) 348.
 - Germany, (28) 736.
 - Great Britain, (31) 243.
 - Japan, (31) 241.
 - Malaya, (31) 50.
 - Ontario, (38) 545, 546.
 - Posen and West Prussia, (31) 841.
 - United States, (38) 256.
 - various countries, (26) 445; (31) 145; (32) 340.
 - West Virginia, (28) 842.
- diseases—
 - cooperative control, (36) 540.
 - development in transportation, (33) 741.
 - dissemination by insects, (35) 253.
 - dissemination by rain, (38) 47.
 - due to antagonistic stocks and scions, (31) 740.
 - dwarfing, effect on oxidase activity, (40) 451.
 - factors affecting susceptibility to, (29) 844.
 - field laboratories for control, (26) 51.
 - heredity of, (31) 841.
 - identification, (32) 97.
 - immunity to, (32) 426.
- in Alaska, (33) 646.
- Argentina, (35) 243.
- Astrakhan, (34) 842.
- Barbados, (28) 752; (31) 547, 746; (34) 841; (36) 540; (38) 350.
- Bengal Presidency, (32) 449.
- Bohemia, (35) 650.
- Bonn-Poppelsdorf and Geisenheim, (36) 47.
- Brazil, (32) 238.
- British East Africa, (37) 453.
- British Guiana, (34) 442; (36) 846; (37) 838; (40) 844.
- Bulgaria, (26) 446.
- California, (26) 445; (34) 240.
- Canada, (33) 741; (38) 545, 546, 646.
- Ceylon, (39) 850.
- Colorado, (34) 539.
- Connecticut, (31) 641; (36) 47.
- Crimea, (33) 652.
- Cuba, (35) 348; (38) 557.

Plant—Continued.

diseases—continued.

- in Dahlem, (34) 727.
- Delaware, (36) 540; (39) 149.
- Denmark, (26) 446; (27) 543; (30) 47; (33) 846.
- Dutch East Indies, (30) 697; (31) 540; (34) 744; (35) 243; (37) 246; (38) 543.
- Egypt, (30) 746.
- England, (32) 544; (36) 541.
- England and Wales, (35) 649; (40) 643.
- Fiji, (36) 347; (39) 453.
- Florida, (37) 651.
- France, (33) 51; (40) 844, 845.
- Germany, (27) 452; (30) 349; (31) 539; (33) 448.
- Great Britain, (28) 148.
- Grenada, (34) 841.
- Guam, (40) 344.
- Hawaii, (38) 848.
- Holland, (36) 847.
- India, (31) 641; (36) 449; (38) 350, 547.
- Indiana, (34) 744; (35) 461; (38) 556; (39) 52, 547.
- Indo China, (29) 46.
- Iowa, (27) 543; (29) 445.
- Italy, (32) 340; (34) 539; (38) 351; (40) 845.
- Jamaica, (39) 849.
- Java, (30) 747.
- Kent, (30) 348.
- Kharkov and vicinity, (37) 246.
- Klosterneuburg, (30) 240; (33) 444.
- Kolozsvár, (30) 240.
- Madras, (40) 845.
- Maryland, (28) 148; (31) 745; (32) 641.
- Massachusetts, (36) 145.
- Mauritius, (32) 441; (33) 444; (34) 843; (37) 550.
- Mecklenburg, (31) 343.
- Michigan, (30) 240; (38) 545.
- Minnesota, (35) 148.
- Missouri, (32) 750.
- Nebraska, (32) 340.
- New Jersey, (30) 746; (32) 547; (34) 153; (36) 845; (37) 652; (39) 648, 752.
- New South Wales, (29) 46; (34) 644.
- New York, (36) 347.
- Nigeria, (33) 145.
- North America, (27) 245.
- Ohio, (28) 148.
- Ohio in 1912, (31) 49.
- Ontario, (32) 48.
- Philippines, (32) 749; (37) 148.
- Porto Rico, (35) 748; (37) 246; (38) 147; (39) 52, 248; (40) 844.
- Proskau, (32) 842.
- Province of Buenos Aires, (37) 349.
- Province of Podolsk, (34) 843.
- Pusa, (34) 49; (39) 146.
- Quebec, (32) 543.
- Queensland, (27) 543; (30) 747; (33) 51; (39) 850.
- Russia, (26) 693; (35) 453, 454, 844; (36) 646.
- St. Vincent, (37) 652.
- Samoa, (31) 347.
- Saxony, (32) 748.
- Scotland, (38) 546.
- Sicily, (35) 45.
- South Africa, (30) 747; (39) 149.
- Southern Nigeria, (29) 547; (33) 741.
- Surinam, (32) 749.
- Sweden, (33) 846.
- Switzerland, (37) 47, 246; (38) 350.
- Tasmania, (36) 846; (39) 850.
- Taurida, (31) 547, 848.
- Texas, (30) 537.
- the Tropics, (34) 48.
- the Tropics, treatise, (26) 51.
- Trinidad and Tobago, (34) 50.
- tropical America, (36) 746.
- Turin, (35) 650.
- Turkestan, (36) 647.
- Uganda, (34) 540; (35) 45; (36) 746; (39) 146.
- Union of South Africa, (31) 539; (34) 241.
- United States, (37) 500.
- Virginia, (29) 645; (33) 544.
- Wageningen, (30) 240; (33) 444; (35) 243; (38) 147.

Plant—Continued.

diseases—continued.

- in Washington, (33) 98, 698; (38) 47.
- West Indies, (30) 546; (35) 44; (37) 452.
- West Virginia, (36) 653.
- Western Australia, (33) 845.
- Westphalia, (32) 238.
- Wisconsin, (33) 344; (35) 844; (36) 845.
- Württemberg, (28) 148; (29) 845.
- inheritance, (27) 751.
- international control, (30) 537; (31) 49, 342, 699; (34) 442, 840; (38) 349.
- introduction into United States, (36) 244.
- law in Sudan, (27) 54.
- legislation concerning, (27) 200; (31) 239.
- legislation in Canada, (26) 256.
- legislation in Ceylon, (30) 146.
- lessons on, (31) 394.
- microbial, notes, (26) 372.
- monograph, (27) 44.
- mosaic, (38) 48.
- notes, (26) 452, 746, 844; (27) 45, 53, 349, 445, 449, 543, 746; (28) 345, 443, 544, 545; (29) 150, 243, 341, 446, 547, 645; (30) 147, 349, 647; (31) 745; (32) 641; (34) 643; (35) 242; (36) 47, 448, 746; (38) 298, 646.
- physiological, investigations, (33) 740.

diseases, relation to—

- bacteria, (31) 745.
- nutrition and weather, (27) 848.
- soil fungi, (40) 318.
- transportation, (39) 849.
- weather, (29) 44; (34) 840; (35) 844; (39) 352, 353; (40) 154.

diseases—

- resistance to, (33) 740.
- review of literature, (26) 51; (27) 148; (28) 345; (29) 445; (30) 47, 240, 648; (31) 145; (39) 148.
- sanitation in control, (27) 154.
- studies, (26) 53, 142; (31) 840; (34) 743; (35) 544.
- studies, cooperation in, (36) 540.
- studies, methods, (35) 844.
- studies, soil temperature as factor, (39) 148.
- susceptibility to, (37) 245.
- textbook, (30) 347; (34) 794; (38) 94.
- transmission by seeds, (36) 844.
- treatise, (26) 142, 242; (27) 746; (28) 345; (29) 150, 546, 644; (30) 240; (31) 241, 539, 745; (33) 646; (35) 835; (36) 236, 540, 628, 645; (40) 47.
- treatment, (26) 48, 51, 345, 539; (27) 45, 128, 154, 253; (28) 442; (30) 648; (31) 50, 541, 635, 745; (32) 447; (33) 151; (34) 40, 642; (37) 51, 143, 247, 453, 544.
- treatment, development in, (34) 48.
- treatment with hot water, (34) 50.
- tropical, treatise, (31) 241.

ecology—

- and soil science, (36) 523.
- in agricultural courses, (38) 195.
- of Salton Sink, (33) 525.

efflorescences, exudations, and incrustations under arid conditions, (33) 825.

embryos as affected by endosperm of seeds, (29) 421.

embryos, nutrition and growth, (38) 127.

enemies in Württemberg, (28) 148.

enzymes, studies, (32) 523; (34) 428, 731; (35) 334.

exploration in China, (35) 140.

extracts, measurement of diastase activity, (33) 315.

fasciated, development, (37) 434.

flavone derivatives in, (37) 430.

food—

- absorption and utilization by sugar beets, (26) 737.
- accessories, bacterial test for, (34) 325.
- as affected by crop rotation, (27) 821.
- as affected by fertilizers, (29) 623.
- availability as affected by carbon dioxide, (27) 514.
- combinations for crops, (26) 622.
- determination in soils, (27) 514; (32) 121.
- effect on ratio of tops to roots, (31) 628.
- essential elements of, (26) 725.
- loss in drainage, (27) 321; (30) 22; (33) 619; (35) 623.
- mineral, factors affecting in soils, (26) 514.

Plant—Continued.

food—continued.

- nitrogenous, availability, (27) 500.
- production as affected by soil sterilization, (29) 122.
- production in soils, (30) 624; (35) 322, 424.
- ratio, effect on quality of sugar beets, (28) 43.
- relation to chlorosis, (28) 623.
- relation to soil fertility, (26) 621; (28) 220.
- relation to soil protozoa, (30) 517.
- removal by corn crop, (35) 623; (37) 232.
- requirements of forest soils, (26) 744.
- galls, treatise, (26) 658; (30) 852.
- genetics, textbook, (40) 817.
- geography, physiological, of Jamaica, (32) 748.
- globulins, preparation, (35) 9.
- growth—

- abnormal forms, (34) 143.
- accessory factors for, (31) 826; (38) 328.
- and climate, relationship, (30) 16.
- and distribution, relation to transpiration, (30) 625.
- and soils, treatise, (39) 512.
- and swelling, relation to temperature, (39) 731.

growth as affected by—

- acids, bases, and salts, (29) 26.
- air movement, (38) 223.
- atmospheric pollution, (33) 126.
- bastard trenching, (30) 236.
- boron, (29) 219; (34) 428, 625.
- carbon bisulphid, (33) 323; (35) 20.
- carbon dioxide, (31) 521; (32) 728.
- different substances, (29) 421.
- electric light, (39) 230.
- electricity, (27) 28, 231; (28) 227, 228, 827; (30) 524, 827, 828; (31) 189, 428.
- fertilizer salts, (29) 329.
- irrigation, (28) 229.
- light, (28) 227; (33) 128, 826; (34) 223; (35) 129.
- magnesia, (26) 723.
- manganese, (39) 627.
- manganese and aluminum, (30) 824.
- nitrogenous soil constituents, (29) 219.
- nutrient and nonnutrient bases, (30) 128.
- organic substances, (37) 632; (39) 526.
- osmotic pressure in nutrient solutions, (35) 434.
- phytin, (28) 128.
- radioactive earth, (33) 123.
- radium, (31) 821; (34) 223.
- shade, (27) 741; (29) 130; (30) 343.
- smelter fumes, (28) 623.
- smoke, (29) 422.
- sodium salts, (35) 816.
- sodium sulphate, (30) 31.
- soil aeration, (27) 821.
- soil bacteria, (31) 827.
- soil constituents, (28) 417.
- soluble humates, (30) 431, 721; (31) 516.
- soot in the air, (26) 727.
- spacing, (30) 633.
- stimulants, (35) 434.
- Streptothrix, (27) 620.
- sulphur, (31) 623.
- thorium X, (29) 131.
- toxic salts, (31) 325.
- volatile conifer products, (32) 618.

growth—

- at different air pressures, (36) 730.
- at different elevations, climatic factors, (39) 809.
- cause, (29) 420.
- crescograph for, (32) 222.
- critical periods, (35) 617; (40) 19.
- effect on retention of bases by soils, (32) 121.
- effect on soils, (28) 520.
- importance of water in, (26) 128.
- in absolute darkness, (26) 431.
- artificial light, (28) 735.
- calcareous soils, (31) 816.
- charcoal, (33) 540.
- distilled water and toxic solutions, (32) 627; (34) 825.
- glycogen solutions, (31) 625.
- heated soils, (26) 815; (31) 216; (35) 722.
- mercury vapor light, (33) 826.
- partially sterilized soils, (30) 225.
- water culture, (33) 223, 628; (39) 28.

Plant—Continued.

growth—continued.

- inhibition, (37) 324, 632.
- internal factors in, (33) 827.
- measurement, (36) 226; (37) 223.
- mechanism and conditions, (36) 524.
- metabolism, and imbibition, (38) 729.
- on ferruginous soils, (26) 245.
- period in Maryland and Delaware, (31) 614.
- periodicity in, (34) 29.
- power exerted in, (29) 827.

growth, relation to

- altitude, (40) 129.
- atmospheric pollution, (34) 299.
- climate, (26) 429; (33) 116; (36) 809; (37) 15.
- nitrogen content of water, (39) 332.
- soil acidity, (39) 513.
- soil moisture, (26) 430; (32) 813.
- soil temperature, (29) 19; (40) 130, 426.
- temperature, (35) 328; (39) 615.
- terrestrial radiation, (36) 617.

growth—

- role of water in, (28) 420.
- seasonal variations, (38) 627.
- soils, and climate, relationship, (26) 516.
- stimulation, (28) 631.
- studies, (28) 29; (33) 28, 221; (36) 327.
- studies in field experiments, (31) 704.
- studies, meteorological observations in, (31) 614.

- treatise, (26) 658; (34) 321.
- under sterile conditions, (32) 49.

hairs, inheritance in, (32) 426.

hairs, relation to nitrogen assimilation, (33) 30.

histology, treatise, (34) 727.

hybridization, bibliograph, (27) 239.

hybridization experiments, notes, (28) 531.

hybrids—

- behavior of, (36) 521.
- factor transmission in, (29) 433.
- inheritance from both parents, (36) 331.
- inheritance of form and structure, (29) 320.
- Mendelian segregation in, (32) 521.
- spontaneous, diagnosis, (30) 433.
- sterility in, (29) 320.

introduction gardens, (37) 542.

introduction, relation to phytopathological problems, (40) 343.

introductions—

- at Kew botanic garden, (29) 441.
- into Arizona, (27) 528; (29) 440.
- into North and South America, (34) 306.
- into the Philippines, (27) 537.

juices, oxidase activity of, (37) 9.

juices, oxidase content, (27) 9.

juices, preservation, (38) 507.

kingdom raw materials, (36) 628; (39) 430.

lice—see also *Aphis* and *specific kinds*.

California, host index, (26) 149; (28) 556.

effect on pear roots, (37) 661.

effect on plant cells, (33) 444.

in Hawaii, (34) 59.

Ohio, (34) 59.

Texas, (38) 859.

West Virginia, (35) 657.

injurious to beets, (28) 354.

injurious to cotton, (27) 454.

injurious to orchard and bush fruits, (29) 158.

jumping, of Hawaii, (40) 262.

jumping, of New World, (31) 453.

notes, (28) 353, 752; (29) 251, 854; (30) 153;

(31) 249, 250; (32) 550; (33) 252; (34) 158;

(35) 56; (36) 854; (37) 460; (38) 654.

of Indiana, (28) 554.

remedies, (29) 356; (31) 155.

sucking phenomena, (32) 553.

life and evolution, treatise, (26) 528.

life, relation to meteorology, (26) 513.

life, relation to radioactivity, (28) 228.

life, treatise, (31) 32; (35) 128.

liquids, drying, (28) 610.

membranes, nonliving, permeability to water, (35) 224.

membranes, permeability, (38) 126.

metabolism, (26) 265.

metabolism—

- as affected by acid and alkaline solutions, (32) 626.
- as affected by etherization, (26) 127.

Plant—Continued.

metabolism—continued.

- buffer processes in, (38) 821.
- geotropic stimulation of, (26) 326.
- pentose sugars in, (40) 30.
- role of nitrogen in, (27) 26.
- studies, nitrogen determination in, (40) 609.

micro-chemistry, treatise, (32) 308.

monstrosities in Buitenzorg, (37) 47.

morphology, bibliography, (29) 626.

mucilages, studies, (40) 818, 819.

names, dictionary of, (38) 125.

nutrients, availability, (28) 537.

nutrients, displacement by water, (27) 525.

nutrition, (26) 530.

nutrition—

- accessory factors in, (31) 826.
- and reproduction in, (28) 224; (39) 827.
- by means of organic substances, (39) 526.
- physiology of, (34) 326.
- relation to rocks and soils, (27) 513; (31) 621.
- review of investigations, (33) 512.
- role of chlorin in, (33) 725.
- role of nitrates in, (26) 625.
- role of soil solutions in, (28) 321.
- silica in, (32) 121.
- studies, (28) 816; (29) 22; (31) 620, 729.
- sulphur in, (31) 817.
- theory of, (33) 124.
- treatise, (34) 135; (36) 114.

oils of Russia, (36) 802.

organisms, lower, of moor lands, (28) 727.

organs—

- and tissues, electrical potential in, (30) 630.
- chemical modifications during autofermentation, (32) 427.
- modification due to ecological conditions, (38) 331.
- partly dried, respiration, (36) 824.
- penetration by light rays, (33) 427.
- wound stimulation and closure in, (26) 826.

oxidases, distribution, (34) 32.

oxidases, review of literature, (33) 426.

parasites—

- adaptive specialization, (33) 740.
- and hosts, relationship, (29) 323; (34) 49.
- as affected by tellurium, (31) 826.
- effect on hosts, (37) 549.
- in Province of Turin, (32) 145.
- in seeds, (39) 225.
- notes, (28) 545; (29) 341.
- osmotic pressure of, (32) 221.
- phanerogamic, osmotic pressure, (40) 130.
- remedies, (27) 128.
- specialization, (39) 148.
- treatise, (31) 539.

parasitism, (26) 227.

parasitism, physiology, (34) 847; (37) 47, 245.

parasitism, studies, (39) 148, 247.

parasitology, treatise, (30) 536.

pathologists, war emergency board, (38) 100.

pathology—

- bacteriology in, (39) 247.
- college work in, (30) 898.
- outline of history, (39) 352.
- prophylaxis in, (36) 645.
- research and extension work, correlation, (39) 849.
- society of in France, (34) 840.
- textbook, (38) 147.
- treatise, (34) 49.

pectins, studies, (37) 309.

peroxidases, action of, (36) 609; (37) 726.

pests, importation regulations, (27) 200.

phosphatids, studies, (27) 202.

physiology—

and distribution, relation to soil solution, (26) 422.

at Johns Hopkins University, (38) 525.

bibliography, (29) 626.

course in, (30) 695.

electrical conductivity in, (33) 626.

elementary, experiments (37) 395.

for horticulturists, treatise, (37) 220.

in agricultural courses, (31) 701.

progress in, (29) 408.

relation to pruning, (33) 837.

review of investigations, (33) 512.

role of electricity in, (27) 231.

studies, (31) 221.

Plant—Continued.

- physiology—continued.
 - treatise, (27) 219; (31) 323; (32) 520; (33) 425; (36) 429; (38) 728.
- pigments—*see also* Pigmentation.
 - bibliography, (32) 18.
 - chemistry of, (33) 802.
 - production, (33) 329; (34) 223.
 - review of investigations, (34) 33.
 - transformation, (36) 730.
- poisons and stimulants, inorganic, investigations, (33) 327.
- poisons, organic, (39) 224; (40) 520.
- populations in Denmark, studies, (40) 832.
- production, course of study, (40) 492.
- products, analyses, (37) 114.
- products, chemistry of, treatise, (31) 803; (37) 801.
- products, volatile, relation to sap flow, (27) 133.
- propagation, (28) 193, 393; (35) 141, 642, 742.
- propagation—
 - and breeding, textbook, (37) 795.
 - and pruning, (30) 236.
 - by cutting, (34) 694.
 - in Tropics, (39) 843.
 - lessons on, (31) 394; (32) 898.
 - treatise, (38) 539.
- proteins, autolysis, (26) 801.
- proteins, precipitation, (26) 482.
- protoplasm, acidity, (37) 726.
- protoplasm, relation to environment, (28) 326.
- Quarantine Act, notes, (27) 845; (29) 342.
- quarantine in Porto Rico, (33) 441; (40) 844.
- quarantine laws of Montana, (31) 648.
- residues, humification, (36) 622.
- residues, influence on nitrogen fixation and nitrate loss in soils, (40) 121.
- root diseases in West Indies, (26) 245.
- roots—*see also* Roots.
 - acid excretion, (27) 514.
 - and soil, medium of exchange between, (36) 128.
 - assimilative power, (27) 514.
 - effect on soil structure, (30) 120.
 - effect on soils, (33) 216.
 - excretion of, (26) 129.
 - exosmosis from, (34) 826.
 - normal behavior of, (31) 221.
 - oxygen requirements, (38) 628.
 - plant food set free by, (33) 325.
 - relation to soil atmosphere, (36) 733.
 - secretion of toxic substances by, (30) 522.
 - secretions, (30) 228.
- rusts, alternate hosts of, (26) 340.
- smuts, life history and cytology, (26) 341.
- species, relationships, (36) 221.
- substances, poisoning of animals by, (26) 86.
- succession—
 - and evaporation, (39) 122.
 - and evaporation in southeastern Washington and Idaho, (32) 626.
 - evaporation and soil moisture in, (36) 144.
 - in a ravine, (35) 27.
 - in Colorado, (38) 23.
 - in the thorn veld, (39) 525.
 - monograph, (37) 434.
 - notes, (37) 526.
 - relation to soil moisture, (37) 418, 725.
 - role of light in, (29) 218.
 - studies, (32) 128; (36) 327.
 - under irrigation, (35) 732.
- tallows of East Indies, (32) 201.
- tendrils and branch nodes, formation, (38) 822.
- teratology, treatise, (36) 430.
- tissues—
 - absorption of acids by, (36) 433.
 - conduction in, (39) 121.
 - detecting sugars in, (39) 27.
 - determination of acidity in, (40) 223.
 - effect on fixation of atmospheric nitrogen, (39) 26.
 - freezing point determination, (38) 523.
 - freezing point lowering, (36) 823; (37) 221.
 - killing by low temperature, (32) 42; (35) 234.
 - medium of exchange between, (36) 128.
 - stimulation by Roentgen rays, (30) 729.
 - survival after freezing, (31) 130.
- trichomes, assimilation of atmospheric nitrogen by, (32) 327.
- yields, relation to soil analyses, (26) 519.
- yields, variation in, (28) 827.

Plantago—

- alpina, analyses, (31) 863.
- lanceolata, geographical distribution, (26) 335.
- lanceolata, variation in, (39) 330.
- psyllium in South Australia, (37) 542.
- variegation in, (38) 731.

Plantain—

- bacterial disease, notes, (37) 838.
- black rot, notes, (36) 48.
- culture experiments, (30) 229.
- disease, notes, (33) 545.
- diseases in India, (38) 351, 547.
- diseases, notes, (39) 453.
- meal, analyses, (40) 173.
- recipes, (30) 165.
- ripe rot, treatment, (37) 154.
- water, delayed germination in, (31) 824.
- wild, fiber from, (30) 38.

Plantains—

- as affected by top dressing, (26) 40.
- fungus disease affecting, (26) 345.
- insects affecting, (40) 453.
- treatise, (26) 47.
- varieties for Philippines, (29) 839.
- varieties in Seychelles, (29) 839.

Planting and harvesting dates, (40) 209.

Plants—

- abnormalities, (36) 734, 837.
- abscission in, (36) 225.
- absorption—
 - and tolerance in bogs, (26) 821; (28) 733.
 - and transpiration in, (26) 822.
 - of boron, (39) 429.
 - dextrose and levulose by, (27) 635.
 - ions by, (33) 521.
 - liquids by aerial parts, (35) 331; (36) 328.
 - nitrogen by, (29) 732.
 - nutritive substances by, (27) 826; (28) 824; (32) 328; (35) 223.
 - ultraviolet rays, (39) 733.
 - water in, (28) 822.
- acclimatization, (30) 328; (40) 523.
- acclimatization by means of grafting, (35) 444.
- acids and bases in, relation, (39) 224.
- acidity in, (34) 731.
- action of saline solutions on, (36) 224.
- adaptation in, (26) 347; (37) 431, 725.
- adjustment to desert habitat, (40) 129.
- adsorption of nitrogen by, (29) 732.
- alimentary and medicinal, treatise, (34) 533.
- alpine, change of habitat, (39) 730.
- alpine, chemical biology, (36) 329.
- alpine, osmotic values, (39) 223.
- alteration and utilization of solar energy, (39) 631.
- alterations induced by ovarian treatments, (32) 429.
- ammonia formation in, (28) 328.
- ammonia utilization by, (36) 631, 632.
- ammonium salts utilization by, (27) 634; (29) 133.
- and bacteria, symbiosis between, (36) 632.
- biocolloids, imbibition, (40) 29.
- external media, exchange between, (32) 625.
- soils, relationship, (28) 37, 718.
- animals affecting, (29) 547; (30) 349.
- antagonistic salt action, (39) 630.
- anthocyanin formation in, (27) 634; (28) 36; (29) 421; (30) 129.
- anthocyanin in, (33) 824; (37) 633; (39) 224.
- aquiferous vessels in, (35) 224; (39) 826.
- aromatic, culture, (33) 643.
- arsenic content, (28) 526.
- as affected by—
 - acids, (37) 224.
 - alkali salts, (28) 527.
 - aluminum, (34) 525.
 - antimonic salts, (33) 30.
 - artificial closing of stomata, (35) 224.
 - ashes, (32) 729.
 - asphyxiating gas, (37) 153, 253.
 - atmospheric electricity, (30) 430.
 - bacteriotoxins, (28) 732.
 - barium and strontium, (40) 819.
 - basic compounds, (27) 229.
 - bilateral illumination, (26) 824.
 - centrifugal force, (35) 431.
 - chemical fumes, (30) 432.
 - chemicals, (30) 343.
 - chlorids, (35) 423.
 - chloroform, (28) 429.

Plants—Continued.

as affected by—continued.

- chromium compounds, (28) 730.
 - climatic complexes and other external factors, (33) 221.
 - coal tar dust, (28) 129.
 - coal tar vapors, (29) 530.
 - colored light, (29) 526.
 - creatinin, (26) 420.
 - distilled water, (31) 730.
 - electricity, (28) 428, 530; (40) 147, 424, 428, 429.
 - environment, (26) 392; (33) 126.
 - ethylene, (34) 626.
 - formaldehyde, (26) 731; (29) 827.
 - freezing, (33) 428.
 - gas, (32) 524, 729; (33) 629; (35) 636; (37) 726, 727.
 - graphite, (29) 19.
 - guanidin, (28) 426.
 - high temperatures, (29) 27.
 - light, (29) 526.
 - light intensity, (39) 225.
 - lime and magnesia ratio, (26) 35.
 - lithium salts, (28) 526.
 - magnesium carbonate, (40) 326.
 - manganese, (32) 129; (40) 820.
 - manganese and copper sulphates, (27) 130.
 - methylene blue, (28) 825.
 - naphthalin, (33) 523.
 - narcotics, (27) 826.
 - nucleic acid, (26) 814.
 - one-sided fertilizing, (28) 624.
 - oxalic compounds, (29) 49.
 - plant metabolism products, (33) 825.
 - potassium cyanid, (38) 855.
 - radiant energy, (27) 521; (30) 431.
 - radioactivity, (28) 529, 731; (30) 30; (31) 129.
 - radium, (27) 134; (36) 526.
 - salicylic aldehyde, (33) 328.
 - salt solutions, (29) 218.
 - size of seed, (30) 725.
 - smoke, (31) 521; (32) 524, 729; (33) 428, 629; (35) 133.
 - soil type, (28) 537.
 - soot, (31) 827; (34) 154.
 - stimulants, (27) 27.
 - sulphur, (27) 27.
 - sulphur dioxide, (35) 636.
 - suppression of endosperm, (29) 629.
 - tar coating, (32) 826.
 - tarred roads, (27) 333, 635; (31) 827.
 - tellurium, (31) 826.
 - tobacco smoke, (26) 230; (27) 254, 830; (29) 30.
 - ultraviolet rays, (27) 827; (33) 28.
 - uranium and lead, (28) 731.
 - various colors, (28) 36.
 - wind, (30) 30, 354.
- ash analyses, (27) 623.
- assimilation—
- as affected by sunlight, (29) 26.
 - experiments, (29) 732.
 - in, (30) 332.
 - of humus by, (27) 26.
 - of mineral matter by, (26) 521.
- assimilatory apparatus, (37) 222.
- barium in, (30) 502; (36) 202.
 - beach, transpiration in, (27) 522.
 - behavior in unventilated chambers, (40) 326.
 - behavior of organic substances in, (39) 526.
 - betain in localization, (27) 203; (31) 108.
 - biology of, treatise, (30) 429.
 - blooming dates, (27) 240; (33) 825.
 - brachysm in, (32) 731.
 - bud sports in, (34) 740.
 - bulbous and tuberous, treatise, (26) 337.
 - calcium oxalate in, (39) 827.
 - calcium utilization by, (37) 631.
 - calcium-magnesium ratios, (39) 630.
 - carbohydrate economy, (37) 524.
 - carbon dioxide assimilation, (35) 633; (39) 225.
 - carbon nutrition of, (27) 525; (29) 28; (31) 426.
 - carotinoids in, (31) 803; (34) 627.
 - castration of, (31) 44.
 - certificated by Royal Horticultural Society, (31) 340.
 - change of habitat with elevation, (39) 730.
 - chemical differentiation of species, (26) 106.
 - chemistry of, treatise, (30) 310.

Plants—Continued.

- Chinese, in British Isles, (38) 39.
- chloroform extract, (27) 500.
- chlorophyll formation as affected by magnesium, (39) 827.
- chlorophyll formation in, (31) 519, 520.
- chondriosomes, (39) 332.
- classification, (36) 411.
- classification, scientific basis, (31) 804.
- classification, treatise, (29) 216.
- climatic change of habitat, (40) 616.
- climatic index, (35) 732; (36) 824.
- climatic injury to, (36) 431.
- climatic relations, (29) 719.
- climbing, treatise, (34) 741.
- collecting, (29) 327.
- collection and preservation, (31) 394.
- colonial, breeding, (28) 736.
- colonial, treatise, (33) 437; (36) 142.
- coloration as affected by crossing varieties, (39) 734.
- composition as affected by—

 - irrigation, (28) 229.
 - salt solutions, (39) 630.
 - sodium salts, (29) 419.
 - soil fertility, (36) 622.

- copper content, (37) 432.
- correlation between—

 - homologous parts, (37) 630.
 - somatic characters and fertility, (32) 628.

- creatinin in, (26) 419.
- cruciferous, club root of, (26) 447.
- cruciferous, *Cystopus* on, (26) 842.
- cryptogamic diseases, (39) 152.
- cucurbitaceous, fungus disease affecting, (26) 244.
- cultivated—

 - determination of races, (28) 331.
 - fruit and seed setting, (27) 329.
 - of East Indies, treatise, (30) 697.
 - relation to soil salts, (28) 426; (31) 627.
 - variety groups of, (26) 43.

- culture experiments, (26) 237.
- culture in sterile media, (27) 333.
- culture indoors, (32) 839.
- culture, treatise, (28) 235.
- cumulative influence of starvation in, (27) 636; (28) 331.
- cyanogen formation in, (28) 527.
- cyanogenetic, new, (39) 332.
- dead, autolysis in, (28) 327.
- dead, autolysis of proteins in, (27) 426.
- deep-rooted, for grass land, (26) 734; (33) 431.
- denitrification in, (29) 325.
- desert—

 - as emergency feed, (40) 276.
 - concentration of cell sap, (36) 823; (39) 29.
 - cryoscopic determinations on tissue fluids, (39) 29.
 - deciduous rootlets, (27) 329.
 - density of cell sap, (32) 34; (36) 327.
 - of Mexico, (31) 132.
 - osmotic pressure in, (33) 628.
 - root habits, (26) 227, 728; (29) 626; (32) 429, 626.
 - root systems, (26) 728; (30) 827; (39) 29.
 - studies, (33) 221.
 - vital statistics, (40) 129.
 - water balance, (26) 530; (27) 29.

- differential septa in, (26) 531.
- dimorphism of chlorophyll grains in, (27) 427.
- dioecious, change of sex ratios in, (36) 736.
- direct absorption of acid solutions, (39) 525.
- disease resistance in, (28) 639.
- distribution, (28) 46; (31) 522; (36) 494; (39) 139.
- distribution—

 - and climatic conditions in United States, (28) 212.
 - and diffusion of nutrients in, (27) 525.
 - as affected by climatic gradient, (26) 821.
 - as affected by sea water, (27) 527.
 - by ocean currents, (38) 125.
 - in glacial plunge basin, (40) 326.
 - of aluminum in, (31) 129.
 - β -enzymes in, (28) 503.
 - fat-soluble A in, (36) 61.
 - ions in, (29) 323; (30) 30, 31.
 - oxidases in, (27) 632; (31) 626.
 - on desert mountains, (40) 129.
 - relation to evaporation, (29) 826.

Plants—Continued.

- distribution—continued.
 - studies, (26) 628; (40) 130.
 - temperature coefficients in, (30) 117.
- domesticated, as affected by sap of wild grafts, (39) 525.
- domesticating and improving, (32) 45.
- drought resisting powers of, (28) 528.
- dwarf, origin, (34) 335.

economic—

- at Agronomic Experiment Station, Santiago de las Vegas, Cuba, (34) 436.
- Amani testing gardens, (30) 644.
- Botanic Garden in British Guiana, (34) 40.
- Horticultural Gardens, Lucknow, (37) 646.
- culture experiments, (28) 147.
- culture in England, (27) 537.
- of Dutch East Indies, treatise, (30) 521.
- Mexico, (40) 246.
- New Caledonia, manual, (30) 445.
- Philippines, (30) 145.
- edible, of New Mexico, (28) 860.
- edible, of prickly-pear scrubs, (40) 415.
- effect on soils, (27) 124.
- electrocultural experiments, (30) 225; (33) 827; (35) 223; (38) 525, 526.
- electroculture, review of literature, (33) 690.
- electromotive phenomena in, (26) 227; (28) 731; (32) 522; (36) 732; (38) 822.
- enemies of, (32) 796.
- evaporation, studies, (39) 631.
- evolution of, (34) 31.
- exercises with, for rural schools, (34) 292.
- experimental hyperplasia in, (31) 326.
- experimental rooms for, (29) 167.
- experiments with, (33) 495.
- exploitation, treatise, (40) 524.
- extraction apparatus, (26) 108.
- feeding power, (33) 519, 626; (36) 626.
- feeding with fertilizers through leaves, (30) 128.
- feeding with mineral matter through leaves, (27) 324.
- fertility, problems, (40) 427.
- fertilization, self-incompatibilities, (39) 432.
- fiber, *see* Fiber.
- flavone derivatives in, (36) 329.
- flowering—
 - as affected by heat and radiation, (26) 429.
 - as affected by insecticides, (36) 737.
 - blooming dates for Iowa, (26) 237.
 - culture in California, (26) 47.
 - manual, (26) 35.
 - notes, (29) 341.
 - organic nutriment, (36) 225.
- for the desert, (31) 132.
- for the seaside, (40) 447.
- forcing, (33) 521; (38) 39.
- forcing experiments, (27) 842; (32) 437; (38) 443.
- forcing with radium, (27) 437; (28) 228, 825; (29) 131.
- free hydrocyanic acid in, (27) 635.
- freezing and frost killing, (34) 223.
- freezing experiments, (27) 523.
- fumigation with hydrocyanic acid gas, (31) 57; (33) 522.
- function of manganese in, (27) 129.
- fungus diseases affecting, (26) 445, 551.
- garden, cryptogamic diseases, (39) 152.
- genotypical factors, mutual influence, (36) 434.
- geotropic movement and autotropism, (39) 629.
- geotropic stimulation and response in, (30) 429.
- geotropism and phototropism in absence of oxygen, (39) 826.
- glucosid formation by, (36) 329.
- grafting and propagating, (26) 442.
- grass-like, of New Mexico, (27) 431.
- green aquatic, precipitation of iron by, (26) 326.
- green, carbohydrate content, (35) 131.
- green, nutrition by organic substances, (36) 432.
- greenhouse—
 - as affected by illuminating gas, (27) 332.
 - fumigation, (36) 842; (38) 258.
 - insects affecting, (27) 356; (28) 853.
 - root knot of, (36) 349.
- growing in sand cultures, (36) 31.

Plants—Continued.

- growing under control conditions, (36) 524.
- growing under sterile conditions, (26) 32.
- hardening process and developments from frost injury, (40) 26.
- hardiness, relation to sap density, (39) 430.
- harmful, of Maryland, (26) 333.
- healthy, bactericidal properties, (33) 740.
- heat development of, (31) 323.
- hedge, of New Zealand, (27) 541.
- heliotropism in, (33) 129; (36) 330.
- hemagglutinin in, (26) 431.
- hematoid iron compounds in, (35) 634.
- herbaceous—
 - breeding experiments, (27) 343; (32) 539.
 - culture experiments, (32) 539; (33) 236; (36) 39.
 - culture in Alaska, (29) 743.
 - from China, (35) 450.
 - handbook, (27) 346.
 - insects affecting, (27) 255.
 - list of seeds, (28) 235.
 - roots of, (36) 223.
 - transplanting, (27) 491.
 - white spot of, (36) 449.
- horticultural, sap studies, (32) 139.
- house—
 - and window, treatise, (34) 238, 836.
 - care, (32) 839.
 - culture, (34) 238, 639.
 - handbook, (26) 744.
 - injuries to, (36) 150.
 - propagation and care, (28) 838.
 - treatise, (35) 450; (37) 346.
- hybrid, sterility in, (31) 225.
- hydrocyanic acid in, (28) 36; (31) 520, 826; (39) 332.
- hydrocyanic acid utilization by, (31) 730.
- hydrogen ion concentration and natural immunity in, (36) 541.
- ice fringes on, (32) 221.
- identification, (31) 340.
- imbibitional swelling, (35) 822; (39) 731.
- immunity—
 - and inheritance in, (40) 523.
 - in, (30) 849; (33) 740.
 - to insects, (38) 458.
 - to their own poisons, (32) 35.
- imported, control and disinfection, (27) 656.
- imports, (26) 128, 237, 629; (27) 329, 528, 637; (28) 332; (29) 524; (30) 730; (31) 327; (32) 628; (33) 827; (34) 336, 527; (35) 29; (37) 819; (38) 629; (39) 226, 333, 632; (40) 327.
- improvement, (28) 331; (31) 130; (34) 635.
- improvement in Sweden, (27) 437.
- in Botanic Gardens, Georgetown, British Guiana, (35) 643.
- in Ganeshkhind Botanical Garden, (35) 643.
- in Government of Viatka, feeding value and toxicity, (30) 577.
- incipient drying in, (27) 29.
- indigenous to Chile, (38) 336.
- induced parasitism in, (26) 433.
- industrial, conservation, (34) 306.
- infecting with parasitic fungi, (28) 545.
- inheritance—
 - from different parts of, (36) 27.
 - in, (28) 876; (30) 328, 329, 330, 331, 732; (36) 521.
 - of characters acquired in salt water, (35) 228.
 - disease resistance in, (36) 845.
 - germinal peculiarities, (40) 131.
 - hoariness in, (28) 228.
 - semisterility in, (32) 725.
- injection experiments, (39) 121.
- injury by other plants, (38) 221.
- insect-catching, in southern Georgia, (37) 560.
- insects affecting, (30) 752.
- insects affecting, treatise, (30) 745.
- inspection service in France, (26) 256.
- intumescences on, (39) 353, 355.
- inulin in, (39) 524.
- irritability in, (29) 421; (32) 222; (33) 29.
- irritability in, treatise, (30) 429.
- lactiferous tubers and cells of, (32) 130.
- leaf dimorphism in, (26) 128.
- leaf injury in relation to cold, (37) 224.
- leguminous, *see* Leguminous plants.

Plants—Continued.

- light relations, photometer for study of, (39) 524; (40) 521.
- light requirements, (27) 221.
- ligneous, of Eritrea, (26) 643.
- lower, protein synthesis in, (27) 226.
- manganese in, (27) 830; (29) 28.
- marine, tolerance to fresh water, (37) 431.
- maturation in, (35) 131.
- measurements of root systems, (28) 228.
- medicinal, *see* Drug plants.
- Mendelian characters in, (28) 370, 531.
- methods of sugar analysis, (40) 30.
- mineral nutrition, (28) 124, 127; (31) 221.
- monocotyledonous, embryology, (37) 127.
- monoecious, evolution, (34) 225.
- morphological and physiological characters, correlation, (36) 221.
- mosaic diseases, (38) 48.
- mutilated, regeneration, (38) 129.
- mutual stimulation through roots, (30) 522.
- mycotrophic, nutrition physiology of, (28) 430.
- myrtaceous, possibilities of, (35) 141.
- narcois in, (27) 130.
- natural selection in, (28) 430.
- nematodes affecting, (26) 748; (28) 242; (36) 150.
- new, at Kew, (34) 40.
- new, notes, (27) 438.
- new or noteworthy, from Colombia and Central America, (34) 827.
- new or noteworthy, tests, (37) 143.
- nitric salts in localization, (30) 30.
- nitrification in, (34) 627.
- nitrogen—
 - assimilation by, (26) 32, 617; (28) 35; (31) 223.
 - atmospheric, assimilation by, (35) 435.
 - formation by, (29) 133.
 - nutrition in, (29) 628.
 - percentage requirement, (40) 425.
 - permutite assimilation by, (29) 127, 517.
 - source for, (26) 723.
- nitrous acid in sap of, (28) 429.
- nonlegume, symbiosis with nodule bacteria, (37) 819.
- notebook for study of, (35) 896.
- nuclear chimeras, (39) 226.
- nutrient solutions for, (36) 31; (39) 331; (40) 520.
- nutritive exchanges in, (33) 425.
- odorous principles, (40) 710.
- of British Guiana, (40) 542.
- Colombia and Central America, (39) 433.
- Connecticut Valley, Mass., handbook, (29) 216.
- Dade County, Florida, (31) 239.
- District of Columbia, (40) 160.
- lower California, (34) 827.
- New Zealand, ecology, (27) 733.
- New Zealand for North American gardens, (33) 842.
- Northern Nigeria, Hausa names, (38) 525.
- sand dunes of Coos Bay, Oregon, (31) 744.
- oil, culture and utilization, (33) 438.
- oil producing, methods of variety testing, (26) 436.
- oil production in, (33) 629.
- on saline soils, (40) 424.
- origin and rôle of oxalate of lime in, (27) 133.
- origin of assimilated carbon in, (27) 227.
- ornamental—
 - breeding experiments, (27) 741.
 - bud variation, (37) 546.
 - crown rot of, (35) 754.
 - culture, (32) 839; (36) 535.
 - culture experiments, (27) 438; (28) 827; (30) 441; (31) 340; (32) 337, 540; (34) 231; (36) 137, 241; (37) 241; (38) 444; (39) 139, 444, 843; (40) 741.
 - culture in Arizona, (32) 232.
 - culture in bogs, (38) 447.
 - culture in Mexico, (34) 741.
 - descriptive notes, (34) 536.
 - diseases, (29) 242; (30) 240; (32) 344; (36) 541; (38) 252; (40) 645.
 - fall v. spring planting, (26) 238.
 - for Florida, (34) 535.
 - home planting, (34) 741; (39) 450.
 - latitude of St. Louis, (34) 439.
 - Maine, (35) 840.
 - Nebraska, (40) 340.

Plants—Continued.

- ornamental—continued.
 - for school grounds, (28) 694.
 - unfavorable city conditions, (33) 442.
 - growth in partially sterilized soils, (26) 815.
 - heredity in, (28) 740.
 - insects affecting, (30) 240; (34) 651.
 - manuring, (30) 445.
 - native to United States, (34) 535.
 - nematodes affecting, (34) 249.
 - new insect enemies, (40) 753.
 - of central Europe, handbook, (30) 742.
 - of Missouri, (28) 439.
 - of New Mexico, (29) 842.
 - Siberian, (39) 244.
 - sports of, (34) 639.
 - tests, Alaska, (36) 443; (37) 142.
 - treatise, (37) 145, 746.
 - varieties, (27) 438; (30) 441; (32) 337; (34) 231.
 - varieties for Illinois, (28) 437.
 - variety tests, (40) 444.
 - wild species, (39) 846.
 - oxidase activity, (37) 326, 429, 430.
 - oxides in, (35) 130.
 - oxidation and reduction in, (38) 223.
 - oxidation ferments of, (33) 409.
 - oxidative changes in, (34) 731.
 - parasitic—
 - and saprophytic, nitrogen content, (27) 526.
 - arsenic content, (27) 830.
 - effect on hosts, (28) 548.
 - parthenogenesis in, (30) 329; (34) 727.
 - pectin substances in, (40) 804.
 - pentosans in, studies, (27) 427.
 - pentose sugars in, (39) 224.
 - perennial—
 - branch development in, (32) 128.
 - for southeastern Alaska, (33) 638.
 - senile changes in leaves of, (32) 728.
 - periodicity in, (27) 522; (28) 435; (35) 632; (39) 317.
 - periodicity of specific characters, (30) 224.
 - permeability in, *see* Permeability.
 - Philippine, propagation by cuttings and layerage, (34) 436.
 - phosphate nutrition of, (26) 622.
 - photosynthesis in, *see* Photosynthesis.
 - phototropic and geotropic reactions in, (35) 632.
 - phototropism, (39) 223, 826.
 - phylogenetic relationships, (33) 822.
 - physics of, (36) 107.
 - physiological characters of, (33) 629.
 - physiological functions, relation to weather factors, (39) 809.
 - physiology of heredity in, (34) 822.
 - plasmolytic phenomena, (39) 528.
 - poisoning by certain elements, (38) 628.
 - poisonous—*see also* Cattle, Livestock and Forage poisoning, and *specific plants*.
 - destruction, (26) 333.
 - feeding experiments with, (33) 384.
 - in Western Australia, (33) 846.
 - manual and bibliography, (26) 327.
 - notes, (26) 86; (35) 383; (38) 646; (39) 85, 433, 891, 892; (40) 182, 300.
 - of California, (32) 778.
 - Colorado, (34) 576.
 - Idaho, (35) 383.
 - Kentucky, (32) 337.
 - Union of South Africa, (34) 241.
 - on ranges, (32) 474; (35) 781; (39) 184, 386, 587, 787, 788, 886.
 - to livestock in Great Britain, (37) 688.
- pollen sterility in, (35) 731.
- pollination, *see* Pollination.
- polyembryony, (39) 527.
- potassium in localization and function, (26) 823.
- potted, *Sciara* maggots on, (36) 460.
- precipitin reaction of, (31) 733.
- preparation and mounting, (34) 94.
- production capacity, inheritance of, (33) 822.
- protection against freezing, (27) 333, 524; (28) 330, 630; (31) 34.
- protection against termites, (27) 454.
- protection, instruction in, (30) 395.
- protective contents of, (26) 629.
- protein assimilation in, (27) 525.

Plants—Continued.

- protein formation in, (31) 224.
- rarer elements in, (38) 409.
- ratio of tops to roots in, (31) 628.
- regeneration, law of, (40) 224.
- regenerative processes in, (27) 829.
- relation—
 - between phyllotaxis and stem growth in (30) 725.
 - between structure and physiological characters, (31) 32.
 - to humus, (30) 122.
 - nutritive elements of soil, (27) 721.
 - reaction of nutrient solution, (40) 324.
 - salt spots, (24) 422.
 - soils, (29) 212; (31) 617, 791.
- resistance to—
 - cold, (30) 333; (32) 139; (39) 525.
 - hot water, (34) 843.
 - injurious influences, (35) 636.
 - insect attack, (29) 653.
 - wilting, (39) 731.
- respiration, *see* Respiration.
- response to—
 - light, (40) 519.
 - selective screening, (39) 825.
 - stimuli, (32) 222.
- rest period in, (28) 639; (33) 223, 520; (35) 221; (36) 224; (38) 640; (40) 511.
- rest period in, shortening, (27) 220, 221; (28) 427, 435; (35) 436.
- resting portions, life processes in, (30) 725.
- reversible removal of salts and bases from, (36) 224.
- role of—
 - calcium and strontium in, (30) 523.
 - catalase in, (27) 526.
 - hydrocyanic acid in, (28) 128.
 - magnesia in, (27) 332.
 - respiration pigments in, (27) 426, 632.
 - water in, (27) 531.
- root cuttings, chimeras, and sports, (37) 434.
- root systems of, (31) 514, 733, 830; (33) 526.
- rye stalk disease affecting, (26) 546.
- salt water, heredity in, (36) 27.
- sand, behavior on lime soils, (31) 425.
- sap extraction from by pressure, (39) 224.
- seashore, as affected by water supply, (37) 27.
- seed, of Vermont, (33) 330.
- seedling, tin cans v. pots for, (29) 236.
- self-protection against *Cuscuta*, (35) 460.
- self-sterile, behavior in intercrosses, (37) 820.
- self-sterile, self-fertility in, (38) 226.
- self-sterility in, (38) 426, 823.
- senile changes in, (35) 222.
- sensitiveness to lime, (35) 430.
- sex cycle, (38) 525.
- sex development in relation to nutrition, (34) 824.
- sex evolution in, treatise, (32) 725.
- sex reproduction in, (34) 526.
- shipping to America, (32) 833.
- shortening vegetative period of, (30) 725.
- smoke injured, microscopic analysis, (26) 532.
- smoke injury to, (34) 744; (37) 130.
- sodium requirements, (28) 730.
- solution culture experiments, technique, (40) 817.
- spore-bearing, hybridization in, (31) 823.
- starch formation and plastids in, (28) 524.
- starch formation in, (34) 627.
- starch-yielding, (40) 339.
- statolith apparatus in, (36) 729.
- stem constrictions of, (31) 343.
- sterile, producing viable seed from, (28) 837.
- sterility and inconceptibility, (39) 632.
- sterilization, (29) 408.
- stimulation—
 - by electricity, (28) 326, 529.
 - by poisonous substances, (27) 131.
 - in, (36) 525.
 - treatise, (27) 331.
 - with nonessential elements, (39) 730.
- stomatal movement in, (26) 627.
- structure terminology, (29) 665.
- submerged land, photosynthesis in, (32) 329.
- succulent—
 - as affected by light, (26) 430.
 - automatic movements in, (35) 27.
 - behavior under desiccation, (36) 327.

Plants—Continued.

- succulent—continued.
 - chemistry of, (40) 710.
 - desiccation and respiration, (40) 29, 223.
 - desiccation and starvation experiments, (34) 430.
 - gas interchange, (40) 29.
 - rate and course of growth, (40) 30.
 - water balance, (26) 227.
- sugar formation in absence of oxygen, (39) 732.
- sugar translocation in, (38) 224.
- sugar utilization, (36) 125; (39) 224.
- susceptibility to smoke, (31) 628.
- swelling in, as affected by bog and swamp waters, (40) 520.
- symbiosis in, (29) 323.
- symbiosis with bacteria, (26) 545.
- synthetic processes in, (28) 127; (35) 431.
- temperature of different parts, (28) 126; (30) 30.
- tolerance toward—
 - acidity, (39) 122.
 - sodium salts, (29) 625; (40) 221.
 - toxic inorganic salts, (30) 130.
- toxic excreta, (27) 30.
- toxins in, formation, (31) 627.
- transmission of acquired characters in, (28) 531.
- transpiration, *see* Transpiration.
- transplanting, (32) 494.
- transplanting lath for, (37) 836.
- treatise, (27) 821; (29) 420.
- tropical—
 - and bacteria, symbiosis, (28) 35.
 - and subtropical, treatise, (31) 235.
 - bark beetles affecting, (30) 660.
 - culture, (32) 45.
 - culture experiments, (28) 142.
 - guide, (28) 435, 820.
 - insects affecting, (32) 340.
 - periodicity in, (28) 39.
 - rusts affecting, (28) 645.
 - treatise, (33) 221.
- tumors in, (36) 46.
- twining of, (35) 431.
- types of segregation in, (39) 123.
- urease in, (27) 633.
- useful, textbook, (33) 96.
- utilization of—
 - fertilizers and soil nutrients by, (32) 747.
 - insoluble phosphates by, (26) 321; (28) 526.
 - nitrites by, (35) 28.
 - phosphates by, (31) 823.
 - solar energy by, (31) 221.
 - sulphur by, (34) 331.
- variegated, anatomy of, (33) 724.
- varieties, grouping, (28) 639.
- velocity of transmission of excitation in, (34) 29.
- water—
 - absorbing power, (39) 731.
 - absorption and evaporation, (40) 27.
 - culture experiments, (36) 731.
 - culture, new method, (33) 628.
 - gas exchange in, (35) 431.
 - nitrogen fixation by, (38) 419.
 - relations, (30) 223; (32) 429.
 - relations, biocolloid exhibiting, (40) 28.
 - relations, representation, (28) 37.
 - requirements, (29) 825; (31) 327, 729; (32) 127; (33) 726; (34) 521, 522; (38) 226, 228.
 - transfer in, (36) 29.
 - transpiration in, (27) 223; (32) 426.
- watering experiments, (37) 325.
- wild economic, of South Kamerun, (30) 239.
- wild, in cookery, (35) 859.
- wild, use as food, (33) 461.
- wild, use as food by Indians, (35) 470.
- wilting, (34) 728; (36) 320; (40) 427.
- wilting—
 - and incipient drying, (38) 522.
 - coefficients, (26) 628; (27) 223; (28) 823.
 - drying, and returgescence, (34) 825.
 - points, (35) 21.
 - studies, (27) 515; (29) 523; (31) 522, 729.
- winter botany, (39) 628.
- winter characters, (39) 628.
- woodland, emergence of aerial organs, (37) 525.
- woody—
 - anatomy, (37) 821.
 - annual growth of, (35) 841.
 - bibliography, (26) 240; (34) 435; (39) 245.
 - cambial activity, (37) 127.

Plants—Continued.

- woody—continued.
 food reserve in, (40) 425.
 forcing, (28) 837; (30) 642; (36) 431.
 of German East Africa, (29) 643.
 Kentucky, (29) 41.
 Oahu lowlands, (34) 345.
 Pikes peak region, (26) 140.
 Switzerland, (35) 842.
 periodicity in, (29) 442.
 phloem and bark diseases of, (34) 442.
 pocket guide, (37) 746.
 recovery from hail wounds, (29) 131.
 reserve fat in, (35) 225.
 rest period in, (32) 437; (33) 223.
 root growth of cuttings, (39) 826.
 wound parasitism and predisposition in, (35) 347.
 wounded, heat evolution by, (27) 830.
 wounded, infection, (30) 243.
 zymase formation in, (39) 733.
- Plasma—
 membrane as affected by anesthetics, (26) 823.
 membrane in plants, (38) 523.
- Plasmas—
 collocation within the cell, (39) 574.
 living, coalescence of, (30) 224.
- Plasmodia, photomicrographs of, (29) 478.
- Plasmiodiophora brassicae, see Cabbage clubroot.
- Plasmiodiophoraceae, studies, (27) 46; (31) 145.
- Plasmodium spp., cultivation in vitro, (28) 179.
- Plasmolysis—
 false, in eel grass, (29) 134.
 false, in young cells, (30) 130.
 in plant cells, (29) 627.
 studies, (27) 829.
- Plasmopara—
 cubensis, notes, (29) 243; (33) 146.
 nivea, notes, (30) 240, 746.
- viticola—
 development and treatment, (26) 550.
 germination of winter spores, (29) 350; (37) 252.
 incubation period, (29) 350.
 infection of grape leaves by, (26) 550.
 notes, (27) 750; (36) 347; (37) 550; (38) 651; (39) 56, 356, 357; (40) 53.
 relation to temperature, (27) 49.
 spore germination and infection with, (28) 749.
 studies, (26) 450, 851; (28) 54, 55, 244, 448; (29) 155, 249; (30) 452; (31) 346; (33) 55, 248, 545; (34) 246, 352, 544; (35) 646.
 treatment, (27) 151; (28) 850; (29) 50; (31) 843; (34) 748, 842.
- Plasmophaga antennalis, notes, (26) 148.
- Plaster cast of diseased fruits, (31) 748.
- Plastering, exterior, specifications, (31) 387.
- Plastids—
 constitution of, (31) 427.
 evolution and physiological rôle, (32) 524.
 formation in plants, (28) 524.
 mitochondrial origin, (40) 818.
 plant, rôle in cell protoplasm, (36) 730.
- Plat experiments—
 calculating yields, (36) 827.
 elimination of error in, (34) 735; (38) 229; (39) 829.
 error in, (28) 536, 537.
 field technique, (40) 226, 623.
 harvesting device, (38) 228.
 standardization, (39) 828; (40) 823.
 technique, (38) 429.
- Plathelminths, review of studies, (31) 154.
- Platyphena scabra on alfalfa, (39) 865.
- Platinic chlorid, potassium, rapid reduction, (40) 711.
- Platinum—
 chlorids, effect on starch ferments, (27) 109.
 metallic, effect on *Aspergillus niger*, (30) 824.
 recovery from potash determination, (40) 806.
 Russia's production of, (40) 12.
 scrap, conversion into chloroplatinic acid, (34) 804.
- Plats, experimental—
 shape and size of, (31) 131.
 size of, (31) 333, 733.
- Platycheirus—
 albinatus, parasites of, (31) 62.
 perpallidus, life history, (38) 362.
- Platyedra sp., remedies, (27) 258.
- Platyasterinae, life history and key, (38) 565.
- Platymesopus erausquinii n.sp., description, (31) 355.
- Platymetopius spp., notes, (27) 859.
- Platynota rostrana, notes, (27) 150; (28) 451.
- Platyomus lividigaster—
 life history, (29) 253.
 notes, (27) 656.
- Platyparea poeciloptera, notes, (34) 851.
- Platypedia areolata on olive, (38) 157.
- Platypeza of Virginia, (34) 857.
- Platypodidae, key, (39) 65.
- Platypylla castoris, parasitism, (31) 60.
- Platypus sp., notes, (32) 552.
- Playgrounds, development and care, (30) 645.
- Plectodiscella—
 piri n.g. and n.sp., description, (33) 649.
 piri, notes, (33) 350.
 veneta, life history and treatment, (38) 853.
 veneta n.sp., description, (38) 252.
 veneta, treatment, (39) 457.
- Plectrodera scalator, see Cottonwood borer.
- Plectrothrips n.sp., from Jamaica, (36) 550.
- Pleiospermium n.g. and n.spp., descriptions, (36) 433.
- Plenodomus—
 destruens—
 distribution and prevalence, (33) 743.
 n.sp., description, (30) 351.
 studies, (39) 354; (40) 347.
- fuscomaculans—
 growth and pyrenidium formation, (34) 647.
 n.comb., notes, (38) 453.
 studies, (35) 653; (36) 746.
 sp. on apples, (34) 744.
- Pleosphaerulina on alfalfa, (33) 848; (36) 450.
- Pleospora—
 batumensis n.sp., description, (27) 546.
 disrupta, notes, (31) 539.
 eriobotryae n.sp., description, (31) 746.
 herbarum, notes, (29) 245.
 lespedezae n.sp., description, (34) 242.
 n.sp., notes, (28) 52.
 sp., affecting Lolium, (26) 545.
 sp., injurious to figs, (26) 449.
 trichostoma, treatment, (32) 145, 341.
- Plesiocoris rugicollis—
 notes, (32) 849.
 remedies, (38) 58.
 studies, (40) 60.
- Plesiothrips, erection, (34) 356.
- Plesioipa reichel, notes, (40) 260.
- Pleural fluids, detection of tubercle bacilli in, (28) 377.
- Pleurisy, exudative, in horses, treatment, (30) 385.
- Pleurisy, treatment, (26) 484; (27) 576.
- Pleuritis, autoserotherapy in, (31) 179.
- Pleuropneumonia—see also Influenza, equine.
 contagious—
 in bovines, (26) 286; (39) 685.
 bovines, diagnosis, (31) 684.
 bovines, review of literature, (31) 177.
 cattle, ultramicroscopic bodies in, (29) 587.
 etiology, (27) 184.
 exudative, in goats, (39) 891; (40) 888.
 immunization, (31) 883.
 in goats, (31) 286.
 in horses, treatment, (26) 684.
 notes, (26) 173.
 virus, effect on calves, (27) 785.
- Pleurotropis—
 atamiensis, notes, (26) 63.
 epigonus in United States, (35) 760.
 n.sp., description, (36) 557.
 rugosithorax n.sp., description, (30) 59.
 telenomi n.sp., description, (26) 352.
 testaceipes n.sp., description, (32) 557.
 utahensis n.sp., description, (30) 661.
- Pleurotus—
 nidiformis, description, (35) 755.
 ostreatus, fruiting forms, (32) 341.
 spp., studies, (28) 852.
 ulmarius, description, (30) 151.
- Plocaederus ruficornis, notes, (29) 457.
- Plodia interpunctella, see Indian meal moth.
- Plorabunda oculata, studies, (29) 355.
- Plover, Pacific, migration, (27) 355.
- Plover, upland, notes, (27) 355.

- Plow**—
bottom, studies, (38) 791.
ditching, construction and cost, (27) 90.
mold board, theory of, (32) 281.
- Plowing**—
and disking experiments, (39) 336.
animal v. mechanical power for, (29) 185.
by electricity in Italy, (31) 591.
by steam in Bombay Presidency, (29) 592.
competition in Kent, (32) 789.
cost of, (32) 688.
deep, in the Great Plains, (39) 812.
deep, notes, (31) 131.
deep v. ordinary, (34) 124.
depths, comparison, (38) 229.
depths, effect on soil moisture, (40) 430.
depths for wheat, (39) 840.
depths, tests, (40) 32, 624.
effect on soil bacteria, (29) 221.
effect on soil moisture, (29) 211.
electric, (39) 88.
experiments, (27) 638; (30) 190; (31) 785; (32) 336; (35) 735; (36) 288, 389; (37) 227; (40) 773.
experiments in Australia, (28) 486, 685.
fall, (36) 195.
mechanical, notes, (26) 893.
mechanical power for, (28) 892.
spring v. fall, for moisture conservation, (32) 525.
technical instruction in, (30) 299.
tractor and disking, (40) 733.
tractor, cost of, (39) 591.
tractors and cable systems for, (32) 486.
windlass and cable system, (31) 487.
windlass and rope method, (39) 88.
with power, (31) 187.
- Plowrightia**—
morbosa—
as affected by cold, (34) 538.
notes, (26) 853; (30) 542, 651, 750; (38) 853; (40) 53.
studies, (32) 52.
ribesia, notes, (37) 251.
virgultorum, notes, (32) 646.
- Plows**—
and harrows, care and repair, (39) 292.
construction and operation, (29) 292.
development and utilization, (35) 391.
draft of, (28) 85, 199, 891; (32) 86, 687; (34) 125; (39) 88.
draft tests, (36) 389.
effect of hitch on draft, (27) 689.
electric, description, (27) 588.
engine, adjustment and operation, (35) 189.
engine gang, development, (27) 90.
for tractor use, (35) 294, 391.
hitches for, (28) 891.
moldboard, draft of, (35) 494.
- motor**—
calculating work of, (31) 291.
description, (28) 84, 685; (30) 590.
descriptions and tests, (27) 90.
hitches and adjustments, (38) 88.
in Germany, (27) 689.
management, (35) 494.
notes, (27) 191, 791, 792.
tests, (27) 690; (29) 86, 185; (30) 388, 789; (31) 487; (32) 188, 189, 281, 789; (33) 190, 589; (34) 686, 788, 891; (35) 87, 585, 688; (36) 189, 588, 589; (37) 591.
use in Uruguay, (29) 87.
power, driving wheel for, (27) 485.
power for, treatise, (26) 89.
specifications, (37) 886.
steam, dynamometer for, (30) 389.
tests, (29) 390; (33) 291, 891.
tractor-drawn, notes, (31) 188.
wooden v. iron for rice culture, (28) 591.
- Plowsole** in citrus groves, (40) 417.
- Plum**—
aphis—
cat-tail as a summer host, (37) 461.
leaf curling, remedies, (33) 555.
mealy, in Egypt, (38) 158.
reddish-brown, notes, (37) 562.
southern, alternate hosts, (39) 464.
bacterial canker, notes, (30) 245, 537.
black knot—
description and treatment, (38) 853.
- Plum**—Continued.
black knot—continued.
notes, (37) 555; (40) 53.
notes and treatment, (29) 155.
studies, (32) 52.
black spot, notes, (40) 638.
blotch, notes, (39) 857.
borer, studies, (33) 454.
brown bark spot on, (39) 251.
brown rot, notes, (34) 241; (35) 351; (37) 457; (39) 452.
brown rot, studies, (31) 749.
buds, resistance to frost, (30) 839.
butter, Servian, composition and characteristics, (31) 66.
Coccomyces disease, wild hosts, (39) 457.
curculio—
life history, (33) 159.
notes, (26) 753, 759; (27) 53, 755; (28) 752; (29) 353; (33) 252, 652.
remedies, (26) 860; (28) 57; (30) 355; (33) 59; (37) 262.
studies, (27) 863.
die-back or winterkilling, notes, (30) 537; (37) 246.
diseases—
in France, (33) 54.
notes, (26) 55, 844; (27) 349; (33) 349, 741; (36) 751; (38) 50; (40) 749, 844, 845.
studies, (28) 240; (30) 451; (33) 544.
fire blight, notes, (29) 848.
flowers, polymorphism in, (28) 540.
foliage, studies, (26) 407.
fruit gumming, notes, (40) 249, 251.
jam, Servian, analyses, (26) 261.
juice, osmotic pressure, (28) 262.
kernels, hydrocyanic acid content, (28) 477.
leaf gall, control, (40) 459.
leaf gall mite, remedies, (39) 252.
leaf miner, European, notes, (26) 558.
leaf miner, studies, (26) 557.
leaf spot or shot hole disease, notes, (32) 49.
leaf spot, studies, (36) 149; (37) 755; (39) 855.
louse, mealy, remedies, (40) 161.
nematode root disease, notes, (28) 235.
oil, composition, (36) 803.
pocket, control, (39) 252.
pocket, studies, (40) 452.
pocket, treatment, (36) 849; (40) 449.
rot, treatment, (27) 143.
rust, life history, (27) 48.
rust, notes, (39) 850.
scale, notes and remedies, (27) 455.
seed oil, composition, (37) 410.
silver leaf, notes, (26) 449, 749; (29) 845; (35) 650; (36) 541; (40) 844.
silver leaf, studies, (34) 648.
slug caterpillar, notes, (36) 654.
slug, studies, (26) 152.
stigmatonose, studies, (33) 349.
stones, histological characteristics, (27) 112.
stones, hydrocyanic acid content, (27) 11.
tree trunks, introduction of solutions into, (36) 740.
twigs, composition, (26) 407.
wilt, studies, (34) 747; (36) 51.
wine, preparation, (27) 412.
wither tip, studies, (40) 850.
yellow leaf, description and treatment, (30) 848.
yellow leaf, investigations, (33) 347.
- Plumage** patterns in fowls, (33) 75.
- Plumaria** sp., notes, (28) 745.
- Plumbago** scandens, notes, (29) 441.
- Plumber's** blowlamp, use against weeds, (32) 139.
- Plumbing**—
country practice in, treatise, (33) 590.
fixtures, water testing for, (31) 190.
for country homes, (27) 389; (30) 690; (32) 87 (34) 286.
for farm kitchens, (36) 390.
household, notes, (30) 893.
recent development in, (31) 190.
system for residences and small institutions, (31) 190.
systems, local vents in, (31) 893.
treatise, (35) 690.
- Plume** grass, analyses, (28) 463.
- Plums**—
acidity, (32) 110; (37) 714.
adaptation and variety tests, (29) 41.

Plums—Continued.

- American, description, (32) 837.
 analyses, (37) 42.
 breeding and testing in Minnesota, (40) 148.
 breeding experiments, (32) 338, 438, 834; (35) 743; (36) 741; (37) 833; (39) 346, 844; (40) 742.
 breeding of new varieties, (28) 540.
 Chinese, host plant of fruit fly, (26) 758.
 composition as affected by irrigation, (29) 236.
 cost of production, (29) 439.
 crown gall affecting, (28) 447.
 crown gall resistance in, (35) 645; (36) 352.
 culture, (30) 840; (32) 45; (39) 447.
 culture—
 experiments, (27) 343; (28) 436.
 in Alaska, (29) 743.
 Europe, (37) 42.
 Maryland, (37) 648.
 Mesa County, Colorado, (37) 241.
 New Mexico, (40) 18.
 New York, (35) 836.
 Ontario, (32) 744.
 southern Texas, (32) 337, 539.
 southern Utah, (30) 442.
 Uruguay, (32) 745.
 Utah, (33) 638.
 Cytospora disease of, (34) 648.
 destruction in Rhine Provinces, (26) 144.
 dropping periods, (40) 740.
 dust v. liquid spraying, (37) 832.
 dusting experiments, (38) 546.
 dying in France, (26) 850.
 effect on composition of urine, (31) 761.
 European, pollination, (28) 237.
 excrescences on, (39) 353.
 fall v. spring planting, (26) 238.
 fertile and self-sterile varieties, (40) 638.
 fruit stocks for, (38) 345.
 greengage, localization of acids and sugars in, (36) 110.
 growing on grass land, (26) 639.
 improvement in Minnesota, (34) 637.
 injuries by freezing, (26) 749; (32) 43.
 inoculation experiments with brown rot fungus, (33) 247.
 insects affecting, (30) 753; (33) 54; (38) 460, 843.
 Japanese and hybrid, wilt disease of, (33) 248.
 localization of acids and sugars in, (36) 110.
 Monilia on, (30) 647.
 new, descriptions, (29) 838; (30) 640; (31) 337; (32) 438; (33) 238.
 of New York, monograph, (27) 40.
 oriental peach moth on, (39) 259, 261.
 pear slug affecting, (26) 863.
 pear thrips affecting, (27) 156; (40) 547.
 picking and handling, (34) 437.
 planting at different ages, (37) 647.
 pollination, (34) 233, 341; (36) 139; (40) 148, 638, 836.
 pollination by bees, (36) 536.
 preservation, (29) 312; (35) 367.
 preservation by pressure, (32) 416.
 pruning, (30) 739; (32) 837.
 pruning and training, (37) 344.
 pruning experiments, (37) 240; (39) 347.
 reducing and nonreducing sugars in, (29) 503.
 ringing experiments, (32) 636.
 ripening studies, (31) 311.
 "salmon fly" injury, (39) 257.
 seedling, variation in, (30) 144.
 self-sterility in, (26) 239; (40) 148.
 sod mulch v. culture, (30) 640; (33) 43.
 spray injury to foliage, (40) 161.
 spray schedules, (39) 39, 140.
 spraying experiments, (27) 143, 439; (28) 436, 652; (37) 744; (39) 345.
 spring v. fall planting, (33) 439.
 sterility in, (32) 834; (37) 240.
 sterility studies, (40) 740.
 stocks for, (32) 337; (40) 445.
 tree census in Washington, (40) 340.
 varieties, (29) 235; (32) 538; (33) 638; (37) 143, 241; (38) 41.
 varieties—
 American, (32) 744.
 Australian, (39) 844.
 for Canada, (30) 840.
 home orchard, (40) 341.

Plums—Continued.

- varieties—continued.
 for Indiana, (39) 447.
 New Jersey, (33) 439.
 Northwest, (39) 844.
 Ohio, (37) 241.
 Oregon, (39) 241.
 western Washington, (33) 44.
 in Oklahoma, (27) 241.
 new, (39) 346.
 resistant to brown rot, (34) 444.
 resistant to disease, (29) 246.
 variety tests, (39) 346.
 wild goose, changes in during ripening, (34) 802.
 wild, recipes, (37) 364.
 winter injury, (40) 835.
 winter washes for, (35) 38.
 winterkilling, (32) 834.
 Plum-sand-cherry, Cikana, description, (30) 640.
 Plusia—
 chalcites, notes, (27) 155, 657; (31) 249.
 eriosoma, studies, (40) 62.
 gamma, notes, (26) 147.
 Plutella—
 armoracia, life history and remedies, (28) 656.
 maculipennis, *see* Diamond-back moth.
 Plymouth Rocks, *see* Fowls.
 Pneumococcus—
 action of blood from different species on, (40) 286.
 as affected by serums and leucocytes, (26) 175.
 hydrogen-ion concentration for growth of, (39) 888.
 immunity, studies, (40) 676.
 infection, experimental, chemotherapy of, (39) 185.
 infection in horses, (40) 784.
 studies, (40) 480.
 Pneumonia—*see also* Pleuropneumonia.
 action of digitals in, (37) 375.
 chronic catarrhal, in sheep, (33) 678.
 contagious, in donkeys, (37) 692.
 contagious, in horses, (36) 85.
 contagious, treatment, (32) 682.
 enzootic, in young pigs, (37) 477.
 equine—*see also* Influenza, equine.
 treatment, (31) 87; (38) 788.
 in cattle, studies, (26) 286.
 in lower animals, (30) 579.
 infectious, in cattle, (36) 675.
 interstitial, in lungs of camels, (30) 680.
 lobar, in domestic animals, (36) 676.
 septic, in bovines, treatment, (31) 85.
 septic, in horses, (38) 184.
 studies, (37) 274.
 treatment, (26) 484; (27) 576; (31) 378.
 Pneumonic plague, susceptibility of animals to, (28) 180.
 Pneumonitis in pigs, (33) 774.
 Pneumonyssus foxi n.sp., description, (34) 364.
 Pneumotuber macadi, notes, (31) 356.
 Poa—
 alpina, analyses, (31) 863.
 argentina, toxicity to sheep, (39) 85.
 ash constituents of, (30) 334.
 fertilis, pollination experiments, (37) 735.
 nevadensis, digestibility, (32) 770.
 pratensis, germination as affected by light, (30) 531.
 pratensis, germination tests, (30) 437; (31) 227.
 spp., germination tests, (28) 327; (29) 143.
 spp., seeding on ranges, (30) 35.
 trivialis, composition and digestibility, (36) 469.
 trivialis, drought resisting qualities, (28) 533.
 Podabrus pruinosis, notes, (30) 459.
 Podagron mantidiphagum n.sp., description, (37) 467.
 Podisma frigida in Alaska, (34) 61.
 Podisus maculiventris—
 destructive to pear slug, (26) 863.
 notes, (29) 456.
 Podocarpeae, root nodules of, (30) 523.
 Podocarpineae, root nodules of, (27) 828.
 Pododermatitis, suppurative, treatment, (40) 181.
 Podogaster evetivorus n.sp., description, (32) 852.
 Podophyllum emodi, culture, (34) 346.
 Podosesia syringae, notes, (28) 155; (36) 659.
 Podospermum laciniatum, appearance in South Australia, (38) 141.

- Podosphaera**—
leucotricha—
 notes, (28) 447; (33) 846; (40) 251.
 parasite of, (32) 544.
 treatment, (39) 856.
oxycanthae, notes, (32) 641; (40) 53.
oxycanthae, treatment, (26) 750.
 spp., descriptions and treatment, (31) 748.
 spp., notes, (34) 247.
 spp., studies, (33) 347.
- Podosporiella**—
 n.sp. (?) on wheat, (33) 848.
verticillata n.sp., description, (34) 644.
- Podothrips semiflavus** n.g. and n.sp., description, (30) 658.
- Poecilanthrax**, notes, (37) 565.
- Poecilocapsus lineatus**, notes, (28) 158; (33) 58.
- Poecilocoris**—
latus, notes, (28) 241; (29) 446.
 spp., notes, (30) 853.
- Poecilonota decipiens**, notes, (30) 455.
- Poeciloscytus basalis**, relation to fire blight, (33) 744.
- Pogonarthria fleckii**, analysis and digestibility, (32) 167.
- Pogonomyia**, anthomyid genus, (40) 357.
- Pogonomymex**—
barbata, notes, (29) 453.
barbata, remedies, (32) 549; (35) 551.
barbatus molefaciens, studies, (27) 263.
barbatus rugosus, remedies, (33) 57.
californicus, notes, (26) 483.
- Pohna grass**, analyses, (28) 768.
- Poison**—
 extraction from brain, (28) 280.
 ivy, constituents of, (36) 502.
 ivy, fat of, (38) 202; (39) 27.
 oak, toxicity, (36) 501.
- Poisoning**, symptoms and therapy, (32) 578.
- Poisonous animals of desert**, (39) 153.
- Poisonous plants**, *see* Plants, poisonous.
- Poisons**—
 detection, (32) 578.
 detection in water, (34) 410.
 economic, consumption and cost in California, (40) 59.
 effect on—
 apples and potatoes, (33) 329.
 germ cells, (33) 368.
 germ cells of fowls, (37) 370.
 microorganisms, (32) 308.
 seeds, (29) 529.
 vitality of male rabbits, (31) 876.
 mineral, detection in organic matter, (26) 206.
 nonprotein, chemical defense against, (32) 78.
 organic, detection in food, (31) 207.
 organic, effect on plants, (34) 526; (39) 224; (40) 520.
 protective action of diet against, (40) 465.
 treatise, (26) 373.
- Pokeweed**—
 critical flowering and fruiting temperatures, (38) 330.
 mosaic disease, studies, (39) 549.
 notes, (30) 145.
- Polanisia lüderitziana**, analyses and digestibility, (27) 871; (32) 167.
- Polar explorers**, food for, (32) 857.
- Polarimetry**, book on, (38) 803.
- Polariscope**, sodium lamp for, (34) 804.
- Polarization**, Clerget, source of error in, (32) 717.
- Polarized light**, chemical effects, (31) 759.
- Pole holes**, digging with dynamite, (36) 89.
- Polenske number**, determination, (30) 114; (31) 811.
- Poles**—
 industry in Canada, (26) 242; (32) 238; (37) 245; (38) 147.
 industry in 1915, (36) 844.
 preservation, (26) 242, 644; (27) 846; (30) 146, 239, 845; (33) 544; (37) 651.
 prices in Canada and United States, (26) 242.
 production in Canada, (28) 645; (30) 744.
 telephone, tests, (30) 843.
 use in Canada, (29) 843.
- Poliomyelitis**—
 acute, notes, (26) 676.
 and dog distemper, relationship, (30) 781.
 bodies, action of human and rabbit blood on, (40) 287.
 in dogs, (40) 483.
 horses in India, (38) 287.
- Poliomyelitis**—Continued.
 in lower animals and transmission, (35) 280.
 sheep, (29) 681.
 relation to rats, (40) 85, 546.
 relation to stable flies, (29) 559, 560.
 studies, (39) 186.
 transmission, (30) 753.
 transmission by—
 insects, (28) 753; (38) 262.
 Lyperosia irritans, (31) 551.
 rats and insects, (36) 354.
 stable flies, (28) 160, 161, 560.
- Polistes**—
gallica, notes, (27) 862.
hebraeus, notes, (38) 164.
metricus, life history and habits, (37) 855.
 spp., notes, (28) 451.
- Political economy instruction in agricultural schools**, (34) 693.
- Pollen**—
 and pollen disease, studies, (39) 803.
 as affected by sulphurous acid, (27) 635.
 development in grapes, (32) 627.
 extract preparations, (40) 284.
 formation, (34) 525; (35) 523.
 germination, (29) 437.
 grain as a colloidal system, (36) 526.
 grains, development in citrus fruits, (28) 524.
 grains, germination experiments, (35) 731.
 mother cells, cytokinesis, (40) 517.
 red clover, physiology of, (29) 829.
 removal by Syrphidae, (39) 734.
 sterility in relation to crossing, (35) 731.
 toxin, studies, (29) 377.
 tube development in microspore of *Pinus sylvestris*, (40) 223.
 tube protoplasm, studies, (40) 28, 818.
 viability, (32) 534.
 vitality, (29) 41, 326.
 water-soluble B in, (40) 564.
- Pollenia rudis**—
 hibernation, (34) 254; (38) 262.
 life history, (36) 359.
 relation to fire blight, (36) 351.
 studies, (37) 665.
 susceptibility to nicotine, (33) 256.
- Poll-evil**—
 etiology and treatment, (26) 484.
 handbook, (39) 190.
 immunization, (31) 378; (34) 580.
- Pollination**—*see also specific plants*.
 bibliography, (29) 437.
 controlled, in Nicotiana, (40) 131.
 effect on fruit of *Diospyros kaki*, (31) 440.
 improved technique, (40) 627.
 physiology of, (34) 628.
 rôle of insects in, (40) 655.
- Pollinia fulva**, analyses, (30) 565.
- Pollinopsis betae** n.g. and n.sp., description, (35) 454.
- Polyarthrititis**—
 in newborn calves, (40) 887.
 in pigs, notes, (36) 280.
 in sheep, (31) 286.
- Polycaon confertus**, notes, (27) 857; (29) 657; (35) 58; (38) 157.
- Polychaetoneura elyi** n.g. and n.sp., description, (31) 456.
- Polychrosis**—
botrana—
 biology and remedies, (34) 654.
 control, (39) 765.
 monograph, (34) 553.
 notes, (26) 655; (28) 559; (35) 54, 257.
 parasites of, (35) 253, 659.
 polyphagous habits, (32) 554.
 remedies, (29) 655; (34) 63; (40) 167.
 viteana, *see* Grape berry worm.
- Polycetidae**—
 adaptation to parasitic life, (27) 656.
 viviparity in, (31) 452.
- Polycystus**—
clypeatus n.sp., description, (39) 869.
foersteri n.sp., description, (30) 661.
- Polydrusus**—
impressifrons, notes, (29) 252; (35) 54; (36) 456.
impressifrons, studies, (36) 859; (37) 359.
 spp., habits, (36) 58.
- Polyembryony in *Quercus alba***, (40) 226.

- Polyetes abolineata, notes, (30) 553.
 Polygala butyracea, rot bacteria affecting, (29) 345.
 Polynotus—
 spp., parasitism, (31) 458.
 vernalis n.sp., description, (38) 63.
 Polygonaceae, development and germination of seed, (32) 329.
 Polygonia interogationis, notes, (33) 58.
 Polygonum—
 convolvulus, notes, (30) 236.
 (Fagopyrum) tataricum, notes, (30) 838.
 persicaria, eradication, (31) 532.
 persicaria, new leaf spot, (39) 152.
 sachalinense, analyses, (31) 863.
 spp., toxic effect on pigs, (38) 589.
 Polygraphus—
 major, notes, (26) 351.
 n.spp., descriptions, (30) 757.
 Polydes rotundus, analyses, (37) 814.
 Polymecus lasiopterae n.sp., description, (38) 165.
 Polymnia edulis, culture experiments, (30) 640.
 Polymorphism—
 in fungi, (34) 32.
 in stamens of fruit tree flowers, (28) 540.
 Polynema—
 bifasciatipenne, notes, (31) 650.
 bifasciatipenne varium n.var., notes, (38) 565.
 imitatrix n.sp., description, (40) 760.
 reduvioli n.sp., description, (37) 856.
 Polyneuritis—
 avian, treatment, (32) 683.
 development in poultry, (27) 66.
 dietary factors in, (35) 166.
 experimental, in birds, (33) 167.
 experimental, treatment, (29) 463.
 gallinarum—
 causative agent, (26) 889.
 etiology, (28) 185; (33) 279.
 pathology and treatment, (30) 187.
 relation to foodstuffs, (29) 865.
 studies, (29) 180; (30) 687.
 in birds, studies, (27) 568, 868.
 fowls, notes, (28) 764.
 fowls, relation to bread diet, (32) 476.
 guinea pigs and pigeons, treatment, (30) 79.
 pigeons, (36) 60.
 onset, relation to carbohydrate ingested, (32) 163.
 prevention by foodstuffs, (28) 760; (31) 762.
 relation to diet, (28) 567; (38) 568.
 relation to rice bran, (28) 564.
 relation to "vitamin," (28) 261.
 studies, (39) 365, 368, 667; (40) 563, 564.
 treatment, (29) 568; (35) 711; (38) 782.
 Polypeptides—
 detection, (28) 503.
 hydrolytic action, (27) 802.
 synthesis by means of enzymes, (34) 708.
 Polyphylla—
 decemlineata, notes, (32) 556; (35) 364.
 fullo, digestive ferments of, (26) 657.
 Polyplax spinulosus, distribution on rats, (29) 755.
 Polyporaceae—
 damaging trees, (39) 149.
 of Montana, (38) 553.
 Polyporus—
 adustus, notes, (28) 551; (30) 653; (32) 242.
 amorphous on pitch pine, (39) 153.
 berkeleyi, notes, (29) 852.
 dryadeus, studies, (30) 354.
 dryophilus, distribution, (32) 150.
 dryophilus, notes, (29) 851.
 ellisianus, notes, (35) 655.
 fulvus, notes, (40) 749.
 igniarius, studies, (35) 655.
 lignosus (Fomes semitostus), notes, (33) 741.
 lignosus, notes, (28) 153; (29) 547; (35) 551; (37) 349.
 lucidus, notes, (29) 446.
 lucidus, studies, (39) 654.
 n.spp., descriptions, (30) 52.
 nugulosus in Malaya, (38) 52.
 schweinitzii, notes, (31) 845.
 schweinitzii, studies, (38) 355.
 shoreae n.sp., description, (38) 547, 555.
 shoreae, notes, (38) 332; (39) 146.
 spp., infection of wood by, (33) 651.
 spp., notes, (26) 144; (27) 653.
 spp. on apples in eastern United States, (35) 654.
 spp. on forest trees, (40) 349.
 Polyporus—Continued.
 sulphureus on alder, (40) 844.
 texanus, notes, (31) 751.
 vaporarius, notes, (26) 551; (28) 350; (29) 157 (37) 253.
 vaporarius, studies, (28) 751; (34) 547.
 versicolor, notes, (31) 751.
 Polyrhaphis grandini, notes, (30) 657.
 Polysaccharids—
 crystallized, from starch, (30) 803.
 of lower fungi, (33) 411.
 Polysphincta texana, notes, (31) 355.
 Polystictus—
 hirsutus in black knot canker, (32) 52.
 hirsutus, treatment, (29) 552.
 spp., notes, (26) 57, 144.
 spp. on forest trees, (40) 349.
 versicolor, description, (30) 151.
 versicolor, notes, (28) 551.
 versicolor, wound parasite of catalpa, (27) 752.
 Polystigma ochraceum, notes, (28) 443.
 Polystigma rubrum, notes, (40) 749.
 Polystomidae of North America, (38) 365.
 Polysulphid solutions, analyses, (35) 678.
 Polysulphids—
 fungicidal value, (27) 855.
 insecticidal value, (34) 61; (35) 838.
 Polysulphur, determination, (35) 207.
 Polytechnic school at São Paulo, Brazil, (28) 793.
 Polytrias—
 amaurea, notes, (26) 362.
 praemorsa, notes, (30) 229.
 praemorsa, tests, (38) 828.
 Polytrichum commune, eradication, (29) 741.
 Polyurates, effect on development of radishes. (26) 229.
 Pomace fly—
 apterous form, (32) 351.
 attacking blueberries, (34) 852.
 biological studies, (29) 457.
 inheritance of length of life in, (32) 555.
 life duration, (38) 563.
 notes, (31) 552.
 pupae as affected by humidity, (39) 563.
 rearing on sterile media, (31) 63.
 Pomace wine, composition and detection, (36) 205.
 Pomaceae of upper South Carolina, (36) 140.
 Pomaderris apetala, food plant of purple scale, (26) 756.
 Pomegranate—
 butterfly, notes, (32) 151.
 disease, notes, (34) 232.
 Melanconium sp. on, (39) 453.
 rot, notes, (31) 539.
 rot, studies, (28) 549.
 Pomegranates—
 acidity, (32) 110; (37) 715.
 culture, (36) 743.
 culture in Arizona, (32) 233.
 culture in southern Texas, (32) 539.
 freeze injury, notes, (39) 843.
 varieties, (32) 337.
 Pomeles, see Grapefruit.
 Pommritz Agricultural-Chemical Station, report, (27) 718.
 Pomological—
 Experiment Station in south Russia, (30) 200.
 instruction, (40) 196.
 instruction in Proskau, (32) 691.
 nomenclature, (39) 833.
 work at Pennsylvania Station, (35) 644.
 work at University of California, (38) 446.
 Pomology—
 bibliography, (33) 537.
 course in, (31) 897.
 extension work in Massachusetts, (35) 592.
 in Australia, (39) 843.
 papers on, (39) 541.
 review of literature, (30) 40.
 teaching, (28) 639; (29) 694.
 valuable unpublished work on, (37) 41.
 Ponphopoea sayi, notes, (28) 158, 352; (34) 752.
 Pond—
 lily aphid as a plum pest, (34) 550.
 lily leaf spot rot, (36) 752.
 mud, analyses, (38) 626.
 mud, fertilizing value, (29) 625.
 weed, floating, growing for wild ducks (29) 373

- Ponds**—
fertilizer experiments, (26) 811; (29) 731.
storage, in agricultural districts, (27) 212.
- Pongamia glabra**—
as a green manure, (38) 220.
cake, fertilizing value, (38) 220.
- Ponies**—
British breeds, improvement, (38) 576.
Mountain and Moorland, notes, (29) 573.
polo, breeding in England, (29) 874.
Shetland, treatise, (30) 270.
textbook, (31) 470.
Welsh and Exmoor wild, as foundation stock for army remounts, (29) 874.
Welsh, manual, (31) 170.
- Pontatoma ornatum**, destruction by vegetable parasites, (28) 354.
- Pontia**—
monuste, notes, (29) 652.
rapae, *see* Cabbage butterfly and Cabbage worm, imported.
- Poecetes gramineus**, destruction of grain aphids by, (29) 452.
- Pop corn**—
breeding experiments, (34) 144.
culture, (29) 743.
rice, studies, (34) 431.
seed, sterilization, (38) 629.
varieties, (29) 426.
viability tests, (34) 145.
- Pop factories**, inspection, (31) 359.
- Popence, E. A.**, biographical sketch, (29) 699.
- Popillia japonica**—
introduction, (39) 363.
larvae, fumigation, (40) 256.
remedies, (38) 842.
- Poplar**—
and willow borer, *see* *Cryptorhynchus lapathi*, borer, *see* *Saperda calcarata*.
canker, studies, (39) 357.
caterpillar, notes, (28) 155.
crown gall, notes, (31) 641, 845.
diseases, descriptions, (27) 451.
heart rot, distribution, (32) 150.
leaf beetle, notes, (28) 256, 752.
leaf miner in New Jersey, (40) 758.
leafhopper, early stages, (39) 360.
leafhopper, studies, (38) 764.
mite, new, (40) 359.
mocha-stone moth, notes, (26) 856.
root weevil, notes, (36) 58.
rust, new, (39) 254.
rusts, notes, (36) 47.
sawfly, notes, (30) 655.
weevil in Wisconsin, (38) 155.
weevil, notes, (26) 753.
wood, production in France, (29) 43.
- Poplars**—
carpenter worm affecting, (31) 550.
for windbreaks, (36) 143.
insects affecting, (27) 453.
yellow, in Tennessee, (30) 535.
- Poponarthria tuberculata**, analyses and digestibility, (27) 871.
- Poppies**—
breeding experiments, (35) 345.
coleopteran attacking, (39) 663.
fertilizer experiments, (26) 129, 425, 630; (34) 820.
- Poppy**—
alkaloids, latex, and oxidases in, (36) 127.
blight, notes, (31) 641; (38) 351, 547, 548.
cake, analyses, (26) 266; (27) 872.
cake, nutritive value, (28) 673.
culture, (36) 743.
diseases, notes, (36) 449.
floral anomalies in, (29) 629.
seed cake, analyses, (30) 268.
seed cake, effect on milk and butter, (34) 570.
seed meal, analyses, (30) 268.
seed oil, detection, (29) 613.
seed, weed seeds in, (35) 444.
Welsh, inheritance of doubleness, (39) 123.
- Population**—*see also* Agricultural population.
growth and distribution in Michigan, (31) 595.
Malthusian theory, treatise, (34) 594.
of United States, (27) 489.
relation to agricultural production, (30) 895.
rural and urban, in United States, (36) 591.
- Populus**—
canadensis, notes, (27) 454.
vancouveriana n.sp., description, (34) 336.
Porbe bjerkandrella, notes, (33) 554.
Porcelain, marking, (26) 715.
- Porcello**—
laevis as affected by Roentgen rays, (28) 57.
laevis, notes, (27) 658.
spp., notes, (31) 758.
- Porcellionides pruinosus**, notes, (31) 758.
- Porcine**, use against swine plague, (26) 587.
- Porria**—
atrosporia n.sp., description, (29) 451.
hypobrunnea, notes, (39) 452.
hypolaterita—
attacking *Tephrosia candida*, (33) 545.
notes, (40) 53, 349.
studies, (37) 458.
on Hevea, (39) 152.
vaporaria (*Polyporus vaporarius*), notes, (28) 350.
- Pork**—
and pork products, preserving and pickling, (33) 259.
as affected by feeding stuffs, (39) 174, 674.
as affected by peanuts, (37) 367.
as substitute for beef in French army, (33) 163.
butchering and curing, (35) 569.
Chinese export, notes, (27) 71.
cold storage, statistics, (28) 869.
cost of cold storage, (27) 164.
cost of production, (31) 568; (33) 259.
cured and salted, in United States, (38) 865.
curing, (32) 771; (39) 373.
curing on the farm, (38) 476.
curing without ice, (28) 465.
cuts, of, (33) 259.
fat, digestion and absorption, (34) 257.
frozen, treatment and utilization, (33) 858.
home butchering and curing, (40) 772.
imports into Great Britain, (27) 470.
inspection and handling in meat trade, (33) 259.
inspection in China and Siberia, (26) 258.
preservation, (36) 509.
prices as affected by cold storage, (28) 871.
prices in Ireland, (31) 96.
production—
contest in North Dakota, (30) 899; (31) 568.
in Florida, (28) 770.
in Pacific Northwest, (30) 771; (31) 470.
notes, (29) 69, 573.
without milk or potatoes, (28) 574.
products—
adulteration, detection, (28) 510.
international trade, (27) 373.
market classifications, (30) 373.
recipes for cooking, (28) 65.
salting experiments, (27) 471.
sausage, examination, (28) 166.
sausage, preservation, (29) 312.
shipping experiments, (27) 470.
shrinkage in curing, (28) 465.
slaughtering and curing, (31) 269.
soft, from rice bran, (39) 478.
soft, studies, (39) 673.
testing and grading on basis of firmness, (39) 673.
trichinae in, (36) 662.
trichinosis, cold storage experiments, (31) 356.
value in the diet, (33) 259.
- Porometer**, description and use, (35) 431.
- Porosagrotis**—
delorata, notes, (31) 352.
orthogonia, poisoned bait for, (34) 358.
vetusta, notes, (27) 159.
- Porphyrothrips cottei** n.g. and n.sp., description, (29) 854.
- Porpoise oil**, effect on milk secretion, (32) 471.
- Porricondylariae** of New York, (34) 752.
- Porthesia chrysorrhoea**, larval disease of, (36) 754.
- Porthetria dispar**, *see* Gipsy moth.
- Porto Rico**—
College, notes, (29) 900; (30) 96; (33) 900; (35) 98; (36) 100.
Federal Station, editorial, (38) 605.
Federal Station, notes, (28) 300, 600; (30) 900; (31) 300, 599, 696, 797; (32) 398; (33) 900; (37) 300; (38) 700, 900.
Federal Station, report, (27) 899; (29) 696; (31) 694; (33) 599; (36) 396; (38) 796; (40) 97.

Porto Rico—Continued.

- Insular Station, notes, (26) 300, 696; (27) 900; (35) 400, 597; (37) 98; (38) 499; (39) 198.
- Insular Station, report, (29) 95; (30) 395; (37) 298; (39) 94.
- University, notes, (26) 97; (27) 494; (28) 94, 698; (30) 798.
- Portulaca, inheritance studies, (40) 131.
- Posidonia australis, fiber from, (38) 529.
- Postal savings banks in various countries, (29) 895.
- Posts, *see* Fence posts.
- Postum cereal residue, composition and digestibility, (32) 666.
- Pot culture work, equipment for, (37) 521.
- Pot experiments—
 - factors affecting yield, (29) 514; (35) 215.
 - moisture control in, (35) 319.
 - wire cage for, (32) 514.
- Potamogeton natans, growing for wild ducks, (29) 373.
- Potash—
 - absorption by bacteria, (29) 315.
 - absorption by oats, (31) 632.
 - absorption by soils, (31) 723.
 - absorption from zeolites, (29) 625.
 - American rock, (40) 134.
 - as blast furnace by-product, (36) 625.
 - cement mill by-product, (36) 625; (37) 817.
 - fertilizer for hops, (30) 37.
 - top dressing for pastures, (29) 632.
 - winter spray for fruits, (30) 641.
 - assimilation by rice, (38) 340.
 - availability in—
 - barnyard manure, (26) 323, 424.
 - feldspar, (37) 522.
 - feldspathic fertilizers, (29) 796.
 - fertilizers, (27) 496.
 - New Jersey soils, (37) 629.
 - soils, (36) 625.
 - soils as affected by lime or gypsum, (36) 519.
 - bearing rocks in Wyoming, (26) 623.
 - brines, evaporation, (34) 425.
 - carriers, comparison, (39) 446.
 - citric soluble, production and fertilizing value, (32) 218.
 - concentration in subsoil, (31) 720.
 - content of coal ash, (39) 329.
 - content of seaweeds, (26) 726.
 - content of soil, relation to Rhizoctonia, (40) 347.
 - deposits—
 - at Spur, Texas, (31) 726.
 - in Alsace, (40) 320.
 - California, (29) 319.
 - Catalonia, Spain, (35) 24.
 - Germany, (29) 319.
 - Germany, origin and importance, (28) 424.
 - Great Basin, (29) 518; (31) 423.
 - Kalusz, eastern Galicia, (29) 822.
 - Michigan, (31) 623.
 - Nebraska, (28) 522.
 - Nevada, (28) 424, 819; (33) 425.
 - New Mexico, (27) 23.
 - northern Spain, (32) 323.
 - southern California, (28) 819; (33) 518.
 - Spain, (32) 126; (33) 26.
 - Spain and Chile, (36) 26.
 - Texas, (28) 522; (32) 820; (34) 26; (35) 23.
 - United States, (27) 22, 500, 627; (28) 33, 221; (31) 125, 218, 321.
 - Upper Alsace, (27) 421.
 - Utah, (36) 325.
 - mineralogy and geology of, (35) 429.
 - determination, (29) 796; (32) 295; (37) 504, 712; (39) 209, 312; (40) 112, 309, 806.
 - determination—
 - in ash of cereals, (26) 807.
 - ashes, (26) 99.
 - fertilizers, (26) 108; (27) 496; (28) 111; (29) 308; (31) 207; (39) 12.
 - soils, (27) 514; (31) 618; (36) 299, 611.
 - preparation of perchloric acid for, (40) 13.
 - displacement by water in leaves, (29) 218.
 - distribution in loam soils, (31) 618.
 - domestic sources, (38) 625.
 - effect on—
 - apples, (28) 144; (29) 438.
 - coherence of soils, (31) 123.
 - composition of beets, (31) 736.
 - composition of meadow hay, (31) 622.

Potash—Continued.

- effect on—continued.
 - cranberries, (30) 143.
 - flax fiber, (31) 332.
 - growth of leguminous plants, (31) 132.
 - maturity of cotton, (31) 40.
 - peaches, (33) 840.
 - quality of barley, (31) 330.
 - rape, (32) 435.
 - red clover, (32) 228.
 - variation of tomatoes and beans, (29) 339.
 - weed growth in meadows, (38) 141.
- evaporation from brines, (35) 219.
- extraction from—
 - aluminum silicates, (26) 426.
 - alunite, (36) 17.
 - feldspar, (26) 726; (27) 724.
 - leucite, (36) 414.
 - minerals, (26) 526.
 - muscovite, (37) 505.
 - rocks and marls, (27) 23.
 - silicate rocks, (27) 500, 628; (28) 33; (37) 427.
 - wyomingite, (35) 503.
- fertilizer experiments, review, (34) 821.
- fertilizers—
 - application, (31) 820.
 - comparison, (26) 31, 525, 536, 837; (27) 125, 725; (28) 221, 325; (29) 126, 215, 516; (30) 221, 527, 724; (31) 820; (35) 323; (37) 135; (38) 218, 726.
 - economic use, (27) 24.
- fertilizers, effect on—
 - composition of sugar beets, (27) 126.
 - conservation of pears, (29) 640.
 - keeping quality of fruit, (27) 644.
 - pasture grasses, (27) 125.
 - production of cereals, (32) 827.
 - soils, (27) 622.
 - sugar beets, (33) 434.
 - tobacco, (33) 732.
 - water requirements of plants, (35) 630.
- fertilizers—
 - for moor soils, (39) 438.
 - residual value, (38) 220.
 - review of investigations, (27) 128.
 - time of application, (27) 125.
 - unbalanced, effects, (40) 621.
- fertilizing value, (26) 534, 536, 537; (27) 324, 436, 437, 534; (28) 520; (29) 227; (30) 232, 428, 836; (31) 226, 328, 333, 527, 738, 821; (33) 828; (34) 519; (37) 521, 636; (38) 133, 217, 534; (39) 127, 335.
- field and laboratory test for, (27) 23.
- fixation by soil bacteria, (34) 815.
- for cranberries, (34) 150.
- Kentucky soils, (35) 122.
- meadow soils, (26) 424.
- moor soils, (40) 230.
- muck soils, (33) 33.
- roses, (34) 143.
- sugar cane, tests, (38) 135.
- sweet potatoes, (33) 337.
- from alunite, (27) 628; (39) 727.
- artificial zeolite, (37) 322.
- banana stalks, (36) 820.
- beet and cane molasses, (38) 124.
- beet sugarhouse waste, (37) 817; (39) 808.
- biotite and similar silicates, (39) 321.
- blast furnace by-products, (38) 424; (39) 118, 121, 625.
- blast furnaces and cement works, (40) 128.
- bracken, (39) 220, 626; (40) 321.
- cactus, (33) 234.
- cement materials, (37) 218.
- cement mills, (38) 123, 124; (39) 328, 329.
- complex mineral silicates, (39) 218.
- copper and gold ores, (34) 425.
- desert brine, (39) 204.
- desert lakes and alunite, (40) 128.
- electrically-treated feldspar, fertilizing value, (35) 726.
- feldspar, (27) 725; (29) 518; (32) 126, 324; (35) 326; (38) 123; (39) 116, 218, 219; (40) 134.
- feldspathic rock, (34) 27.
- fir wood mill waste, (35) 327.
- flue dust, (39) 118, 121, 430, 626.
- freshly cut kelp, (29) 519.
- greensand, (38) 123; (39) 218, 219; (40) 299, 423.

Potash—Continued.

- from hedge clippings and trimmings, (32) 218.
- hemp pulp, (40) 629.
- incinerator ash, (37) 722.
- Italian leucitic lavas, (39) 219.
- kelp, (31) 823; (32) 723, 821; (35) 327; (39) 204, 220, 521; (40) 128.
- marsh plants, (38) 520.
- mica, (27) 520.
- Nebraska lakes, (37) 322.
- olive-oil residue, (40) 26.
- Pinus insignis, (40) 321.
- rapakivi and pegmatite granites, (27) 127.
- sawmill waste, (33) 819.
- Searles Lake, (40) 128.
- sea-water bittern, (39) 328.
- seaweed, (27) 724; (28) 522; (29) 128; (34) 26.
- silicates, (27) 724; (29) 215, 518, 822.
- sunflower stems, (38) 207; (40) 242.
- water hyacinth, (39) 523; (40) 347.
- wood and plant ashes, (34) 425; (37) 427.
- wood ashes, (40) 320.

- German and other sources, (35) 24.
- growing crops without, (39) 334.
- growing wheat without, (40) 134.
- imports and use in United States, (31) 321.
- imports from Germany, (32) 517.
- in banana stalks and skins, analyses, (36) 123.
- common soil-forming minerals, (39) 728.
- granitic soils, (32) 126.
- loess soils, (35) 809.
- soils, liberation, (34) 519.
- soils, solubility, (39) 821.
- tropical agriculture, (35) 126.

industry—

- in America, development, (37) 818.
- Austria-Hungary, (33) 822.
- California, (33) 819.
- Germany, (26) 526; (27) 691; (30) 428; (33) 518.
- 1913, (32) 218.
- United States, (36) 820.
- Upper Alsace, (30) 724.
- treatise, (26) 816.

lakes and deposits as a source of potash, (34) 327.

- lime, fertilizing value, (26) 526; (32) 218.
- lime, preparation and use, (27) 326.
- long-continued use, (34) 128.
- loss by leaching, (33) 122.
- loss from manure, (32) 818.
- loss from soils, (27) 321; (29) 211; (35) 812.
- loss in drainage water, (26) 422, 620.
- loss in industrial wastes, (37) 630.
- methods of analysis, (28) 709.
- mica, decomposition by soil bacteria and yeast, (31) 121.

- mica, fertilizing value, (28) 33.
- mineral sources, (26) 425; (36) 728.
- minerals, fertilizing value, (27) 724; (29) 625.
- minerals in soils, (31) 720.
- mines and works of Alsace, (40) 128.
- minimum, for plant growth, (29) 22.
- natural and domestic sources, (34) 519.
- of feeding stuffs, digestibility, (40) 769.
- of silicates, solubility, (34) 328.
- of soils, studies, (27) 323, 520; (28) 29.
- phosphate fertilizers, Schröder's, tests, (38) 520.
- phosphoric acid fertilizer, new, (38) 519, 726.

production—

- from sugar beets, (26) 613.
- in California, (40) 725.
- Nebraska, (40) 320.
- 1917, (39) 824; (40) 725.
- United States, (36) 26; (38) 326, 424; (39) 120; (40) 26, 516, 517.
- relation to grape chlorosis, (26) 344.
- relation to yellow-berry in wheat, (33) 42.
- removal by corn crop, (37) 232.
- replacement by soda as a fertilizer for sugar beets, (32) 230, 324.
- replacement in Feldspar, (30) 126.
- requirements of nitrogen bacteria, (27) 226.
- residue from oxygen-acetylene plant, analyses, (32) 424.
- residues in Hagerstown soil, condition, (40) 25.

Potash—Continued.

- resources and use in New Zealand, (37) 218, 629, 817.

- resources of Australia, (37) 322.
- resources of United States, (37) 522.
- rôle in plant nutrition, (26) 530.

salts—see also Potassium salts.

- absorption by plant leaves, (27) 324.
- analyses and tests, (37) 322.
- as affected by phosphatic slag, (28) 508.
- as protection against frost, (27) 421.
- drilling v. broadcasting, (31) 123.

salts, effect on—

- action of phosphoric acid, (27) 623.
- asparagus roots, (28) 236.
- burning quality of tobacco, (38) 140, 239; (39) 34.
- disease susceptibility in cereals, (29) 844.
- germination of seeds, (29) 328.
- soils, (26) 216.

salts—

- extraction, (27) 22.
- fertilizing value, (27) 125, 234, 725; (30) 221; (34) 519.
- for meadow soils, (34) 22.
- imports into United States, (31) 726; (32) 723; (33) 625.
- in sugar beets, studies, (31) 325.
- of United States, (27) 23.

salts, production—

- and use, (27) 327; (33) 218, 219.
- and use in 1911, (29) 213.
- and use in 1913, (32) 126, 425.
- in Germany in 1912, (29) 128.
- in 1915-16, (37) 523.

salts—

- replacing with sodium chlorid, (34) 726.
- sources and production, (35) 23.
- substitution for common salt in nephritis, (29) 167.
- trade in, (31) 29.
- Wittelsheimer, composition and use, (31) 519.

scarcity, relation to cotton yields, (40) 335.

search in America, (26) 526.

soil, utilizing, (40) 300.

solubility—

- as affected by bacteria, (29) 315.
- as affected by gypsum, (39) 521.
- in mixed fertilizers, (31) 207.
- in muscovite, (40) 812.

- sources, (30) 27; (34) 327; (36) 624; (39) 219, 327, 429, 430, 724, 727, 824; (40) 422.

sources in America, (34) 821.

sources in Great Britain, (32) 218.

- sources in United States, (29) 419; (31) 321; (36) 26, 124.

spring application, (33) 625.

statistics for 1914, (31) 30.

substitutes for, (34) 327.

supplies of Great Britain during the war, (35) 126.

supply, (34) 49.

supply, German and other sources, (32) 820.

supply in United States, (32) 126.

use in agriculture, (34) 27.

in Germany, (28) 726; (36) 726.

in 1911, (27) 727; (28) 626.

on cotton, corn, and potatoes, (40) 516.

on moor soils, (38) 132.

on pastures, (26) 437.

v. phosphate fertilizers, (40) 824.

v. sodium for sugar beets, (33) 135.

waste liquor lime, fertilizing value, (34) 26.

works waste products, fertilizing value, (34) 328.

works waste water for irrigation, (35) 637.

world's supply, (34) 724.

world-wide search for, (31) 323.

Potassic—

rocks, utilization, (32) 324.

superphosphate, fertilizing value, (26) 231; (27) 530.

Potassium—

acid phthalate in acidimetry and alkalimetry, (34) 408.

adsorption by soils, (34) 817.

aluminum sulphate, fertilizing value, (37) 527.

Potassium—Continued.

- and calcium sulphate, preparation, (32) 424.
- assimilation by plants, (31) 219.
- availability in soils, (33) 517; (35) 429.
- bichromate—
 - as milk preservative, (27) 677; (32) 576.
 - effect on germination of seeds, (26) 820.
 - effect on milk, (31) 507; (33) 503.
 - effect on plants, (27) 131.
- bisulphate, use in manufacture of superphosphates, (27) 627.
- bromate, effect on enzym action, (38) 611.
- bromid, effect on composition of milk, (30) 178.
- carbonate—
 - effect on germination of dodder, (27) 28.
 - effect on germination of seeds, (29) 328.
 - fertilizing value, (29) 632; (38) 218.
- chlorate injection into trees, (32) 754.
- chlorid—
 - absorption by plants, (35) 435.
 - action on humus, (39) 514.
 - analyses, (28) 326.
- chlorid, effect on—
 - activity of malt diastase, (29) 528.
 - activity of soil bacteria, (31) 821.
 - ammonification and concentration of soil solution, (39) 323.
 - composition of cereals, (37) 827.
 - composition of turnips, (29) 418.
 - germinating plants, (33) 128.
 - germination of seeds, (29) 327.
 - nitrogen content of soil, (38) 213.
 - quality of sugar beets, (28) 44.
 - wheat, (38) 439; (40) 244.
- chlorid—
 - fertilizing value, (26) 329, 526, 630, 736; (27) 32, 137, 234, 325, 338; (28) 832; (29) 625, 830; (30) 25, 427, 437, 636; (31) 731, 829; (32) 136; (35) 535; (36) 121; (38) 218, 422, 816, 825; (39) 434, 737, 740; (40) 516.
- for asparagus, (28) 339.
- garlics, (27) 844.
- citrus fruits, (31) 634.
- cranberries, (34) 150.
- imports into United States, (31) 726.
- preparation, (40) 801.
- secondary and subsidiary effects, (30) 26.
- use with seaweed, (33) 331.
- waste liquors, effect on water supplies, (30) 714.
- content of muscles, (26) 506.
- content of spinach, (40) 451.
- cyanid—
 - analyses, (38) 643.
 - as greenhouse fumigant, (32) 536.
 - as larvicide, (27) 452.
 - conduction in plants, (38) 855.
 - effect on permeability, (37) 326.
 - effect on permeability of vegetable plasma membrane, (34) 333.
 - effect on trees, (33) 154, 556, 725.
 - injection into trees, (32) 152, 754, 846.
 - inoculation, effect on trees, (39) 225, 762.
 - insecticidal value, (35) 755.
 - toxic action on *Paramecium* and *Didinium*, (40) 455.
- deficiency, effect on oat plant, (40) 324.
- detection as cobalt-nitrite, (26) 607.
- detection with tartaric acid, (32) 608, 609.
- determination, (28) 509; (29) 307, 609; (32) 714; (33) 710; (34) 503; (35) 315; (36) 111, 299, 611; (37) 110; (39) 413, 714.
- determination—
 - as platonic chlorid, (26) 108; (27) 409.
 - in blood, (40) 116.
 - fertilizers, (29) 409; (35) 12.
 - foods, (29) 809.
 - minerals, (27) 805.
 - potassium silicate, (30) 412.
 - potassium sulphate and kainit, (28) 710.
 - soils, (27) 109; (28) 204.
 - vegetable ash, (38) 311.
- distribution in renal cells, (30) 277.
- effect on—
 - Aspergillus fumigatus*, (29) 30.
 - Aspergillus niger*, (28) 527.
 - grapes, (31) 339.
 - growth of tubercle bacilli, (29) 381.
 - hydration and growth, (40) 818.
 - yield of rubber, (31) 444.

Potassium—Continued.

- excretion under normal and pathological conditions, (29) 166.
- ferrocyanid—
 - fertilizing value, (34) 27.
 - residue, fertilizing value, (26) 323.
 - toxicity in soils, (40) 726.
- hydroxid and sulphur, reaction between, (31) 409.
- importance in animal nutrition, (31) 663.
- in metabolism of *Aspergillus niger*, (30) 727.
- iodid, effect on ammonification, (28) 724.
- iodid, stimulation of radishes by, (39) 730.
- iodid, therapeutic value, (35) 382.
- localization and function in plants, (26) 823.
- mobility in vegetable tissue, (32) 128.
- nitrate—*see also* Saltpeter.
 - absorption by plants, (35) 432.
 - deposits in Brazil, (39) 817.
 - deposits in New Mexico, (27) 127.
 - deposits in western America, (26) 226.
- nitrate, effect on—
 - alcoholic fermentation by *Sterigmatocystis nigra*, (37) 223.
 - baking quality of flour, (30) 555.
 - burning quality of tobacco, (38) 140, 239.
 - flow of rubber latex, (29) 748.
 - germinating plants, (33) 128.
 - germination of dodder, (27) 28.
 - germination of seeds, (29) 328.
 - legume bacteria, (29) 733.
 - nitrogen-assimilating bacteria, (38) 724.
 - toxic salts, (30) 31.
 - wheat seedlings, (31) 426.
- nitrate—
 - exports from India, (26) 524.
 - fertilizing value, (31) 518; (36) 626; (38) 218.
 - in hops, (32) 502.
 - in plants, (27) 26.
 - preparation, (40) 801.
- of biotite, availability, (33) 722.
- of soils, studies, (28) 30.
- oxalate, effect on starch ferments, (27) 109.
- oxalate, toxicity, (28) 661.
- oxid, determination in soils, (31) 313.
- palmitate, use in water analysis, (31) 502.
- permanganate—
 - action with plant peroxidases, (37) 726.
 - antiseptic and germicidal value, (37) 176.
 - as antidote for poisonous plants, (37) 688.
 - as soil disinfectant, (31) 621.
 - as soil sterilizer, (26) 322.
 - determination of arsenious acid with, (28) 804.
 - effect on moor soils, (35) 724.
 - effect on plant growth, (35) 434.
 - effect on root growth of cuttings, (39) 826.
 - effect on sweet peas, (27) 621.
 - fertilizing value, (28) 820; (33) 841.
 - reduction in plants, (30) 31.
 - relation to tobacco gummosis, (28) 243.
 - solution, standardization, (31) 501.
 - solutions, preparation, (38) 412.
 - therapeutic value, (38) 585.
 - treatment for seed grains, (34) 844.
 - use against grape oidium, (28) 152.
- persulphate, oxidation of carbohydrates by, (33) 502.
- phosphate, effect on wheat seedlings, (31) 426.
- phosphate, fertilizing value, (27) 342.
- platonic chlorid, reduction, (27) 409; (40) 711.
- relation to carbohydrate formation and decomposition, (27) 635.
- removal from soil, (39) 517, 724.
- requirements of *B. subtilis*, (39) 619.
- requirements of barley and oats, (37) 34.
- salt as an adulterant of table salt, (29) 867.
- salts—*see also* Potash salts.
 - absorption by plants, (35) 433.
- salts, effect on—
 - ammonia fixing power of soils, (27) 323.
 - Aspergillus niger*, (28) 824.
 - bacterial flora of soils, (28) 815.
 - catalase, (26) 504.
 - composition of plants, (29) 419.
 - frost resistance in plants, (28) 38.
 - germination and growth of crops, (34) 125.
 - hydrogen-ion concentration in soils, (39) 425.
 - nitric-nitrogen accumulation, (40) 722.
 - plants, (32) 538.

Potassium—Continued.

- salts, effect on—continued.
 - purin metabolism, (28) 261.
 - solubility of phosphates, (36) 626.
- salts—
 - equilibria in solutions, (39) 203, 204.
 - extraction from silicate rocks, (29) 215.
 - fertilizing value, (28) 123; (30) 527.
 - flocculating power in clay, (27) 620.
 - fractional crystallization, (39) 204.
 - hygroscopicity, (35) 631.
 - in salines of United States, (29) 214.
 - toxicity in soil, (36) 515.
- separation from sodium, (29) 807.
- silicate, fertilizing value, (30) 527; (31) 820.
- silicate in phonolite, fertilizing value, (26) 726.
- soil, studies, (27) 500.
- sulphate, as winter spray for fruits, (30) 641.
- sulphate, effect on—
 - activity of soil bacteria, (31) 821.
 - carnations, (36) 446.
 - germination of seeds, (29) 328.
 - marsh plants, (29) 531.
 - powdery mildew infection, (33) 244.
 - soil acidity, (37) 23; (38) 620.
 - tomatoes, (29) 339.
- sulphate—
 - extraction from alunite, (26) 526.
 - extraction from feldspar, (28) 223.
 - fertilizing value, (26) 233, 329, 526, 536, 630, 639, 838; (27) 325, 530, 639; (28) 431; (29) 632, 829; (30) 437, 835; (31) 731; (32) 831; (33) 432; (35) 22; (36) 121, 425; (37) 229, 449, 527, 529, 729; (38) 32, 135, 218; (39) 518, 530, 637; (40) 515, 516, 532, 633, 725, 733, 734.
- for carnations and roses, (29) 840.
- citrus fruits, (31) 634.
- sweet potatoes, (31) 437.
- tobacco, (31) 738.
- imports into United States, (31) 726.
- nitrogen absorption capacity, (28) 325.
- preparation, (40) 801.
- secondary and subsidiary effects, (30) 26.
- sulphid, effect on soil acidity, (37) 23.
- sulphocarbonate as an insecticide, (32) 246.
- sulphur mixture, insecticidal value, (34) 60.
- tellurate as a fly repellent, (26) 755.
- toxicity toward plants, (30) 128.

Potato—

- aphid—
 - alternate hosts, (39) 464.
 - control by lady beetles, (34) 555.
 - notes, (28) 554; (37) 761.
 - pink and green, notes, (39) 761.
 - pink and green, studies, (34) 550; (37) 849; (38) 462; (40) 456.
 - relation to spinach blight, (39) 551.
 - studies, (38) 654.
- Association of America, proceedings, (37) 800; (40) 529.
- bacterial—
 - diseases in Ontario, (37) 150.
 - diseases, notes, (37) 652.
 - diseases, studies, (26) 847.
 - fibrovascular disease, notes, (26) 547.
 - ring rot, studies, (33) 146.
 - rot, notes, (27) 248.
 - rot, studies, (26) 846; (30) 48; (35) 349.
 - wilt, notes, (32) 50.
- beetle, behavior in deserts, (40) 860.
- beetle, Colorado—
 - control by parasites, (37) 760.
 - in Germany, (33) 158; (35) 57.
 - life history, (34) 756.
 - notes, (26) 865; (29) 252, 652; (33) 58; (34) 753; (37) 599; (38) 161, 653.
 - on Pacific coast, (31) 254.
 - oviposition, (34) 655.
 - pigment and color pattern in, (26) 350.
 - relation to tomato leaf spot, (40) 644.
 - remedies, (27) 161; (28) 59; (33) 358; (35) 661, (39) 337, 853; (40) 330.
 - beetle, remedies, (30) 852; (40) 734.
- black—
 - canker or wart, (40) 848.
 - canker, treatment, (31) 149.
 - dot disease, notes, (32) 146.
 - heart, description, (33) 741.
 - heart, studies, (30) 149; (34) 242; (35) 349; (38) 835.

Potato—Continued.

- black—continued.
 - scab, international control, (30) 537.
 - scab, notes, (32) 342.
 - scab, studies, (26) 547.
 - scurf, treatment, (40) 450, 734, 847.
 - wart, notes, (27) 245.
 - blackleg—
 - notes, (30) 197; (31) 641; (36) 250; (40) 449.
 - studies, (36) 648; (39) 148, 456.
 - treatment, (26) 546.
 - blight—
 - infection experiments, (34) 52.
 - notes, (26) 143; (31) 641, 746; (36) 449; (39) 850.
 - prevalence in Ireland, (28) 151; (30) 539.
 - resistance to, (38) 828.
 - treatment, (27) 735; (30) 539; (33) 97; (38) 235.
 - treatment with hot water, (34) 50.
 - blossoms, color variation, (39) 535.
 - blossoms, secretion of stigmatic fluid by, (33) 233.
 - blotch and streak disease, identity, (32) 239.
 - Botrytis disease, (39) 250.
 - bread, recipes, (37) 364.
 - brown streak and blossom abortion, (37) 549.
 - cake, analyses, (36) 65.
 - canker—
 - description, (32) 443.
 - in Sweden, (33) 846.
 - notes, (31) 243.
 - studies, (26) 547.
 - treatment, (34) 247; (37) 249.
 - chips, preparation, (29) 414.
 - club champions in 1913, (30) 399.
 - clubs, suggestions for, (31) 793, 794.
 - collar rot, notes, (32) 442.
 - contests for boys and girls, (28) 194.
 - corky scab, notes, (34) 241; (35) 650.
 - corky scab, occurrence in Scotland, (26) 748.
 - curly dwarf, notes, (31) 748; (38) 545.
 - curly dwarf, studies, (36) 530; (37) 841.
 - curly leaf, studies, (34) 450.
 - diet, effects of, (34) 164.
 - diggers, descriptions, (27) 191.
 - diggers, tests, (27) 589.
 - disease, new, description, (33) 346.
 - disease, new in Hawaii, (40) 644.
 - diseases—
 - and pests, (38) 834.
 - conference on, (40) 846.
 - control, (39) 53, 355.
 - control in Canada, (38) 646.
 - description and treatment, (38) 549.
 - differentiation, (30) 649.
 - dissemination by seed, (38) 847.
 - due to handling and storing methods, (39) 149.
 - hill selection as a preventive, (33) 98.
 - in Alaska, (39) 125, 127.
 - Bermuda, (38) 149.
 - Canada, (37) 553.
 - Dutch East Indies, (37) 249.
 - Germany, (37) 150.
 - Indiana, (38) 250.
 - Ireland, (37) 350.
 - New Jersey, (40) 747.
 - southern Idaho, (35) 751.
 - Switzerland, (37) 47.
 - Tasmania, (36) 846.
 - Western Australia, (33) 845.
 - notes, (26) 243, 844; (27) 150, 650; (28) 53, 148, 548, 645; (29) 141, 444, 549, 646; (30) 47, 240, 448, 539, 647; (31) 52, 232, 543, 841; (32) 136, 544, 546, 642; (33) 52, 147, 544, 741, 849; (34) 543, 744; (35) 48, 455; (36) 541, 746; (37) 37, 150, 538, 551, 652; (38) 535, 848; (39) 353; (40) 50, 154, 344, 449, 746, 844, 847.
 - of Australia, treatise, (30) 48.
 - physiological, (39) 148.
- diseases, relation to—
 - seed trade, (28) 738.
 - soil fungi, (39) 249.
 - temperature, (30) 649.
 - weather, (26) 53.
- diseases—
 - review of investigations, (27) 246; (31) 51; (38) 549.

Potato—Continued.

- diseases—continued.
 studies, (26) 142; (27) 446; (28) 545; (29) 549; (30) 148; (32) 239; (34) 443; (35) 48, 544; (39) 149, 249, 455.
 treatment, (26) 53, 233, 536, 631, 848; (27) 151, 334; (28) 53, 238, 433; (29) 146, 242, 336; (32) 444, 545; (35) 652; (36) 47, 49; (39) 52.
 distillery refuse—
 for sheep and cattle, (31) 766.
 nutritive value, (32) 168.
 dry rot, description, (36) 250.
 dry rot, notes, (32) 48.
 dry rot, studies, (29) 47; (39) 250, 651.
 dry spot, description, (35) 547.
 drying, (37) 491, 800; (38) 207; (40) 116.
 drying—
 in Hawaii, (39) 208.
 industry in Germany, (26) 414; (28) 512; (29) 209; (30) 671; (32) 315; (33) 715.
 industry, progress in, (29) 509.
 notes, (26) 117.
 early blight—
 notes, (38) 235, 649.
 remedies, (40) 330.
 studies, (38) 451; (39) 248; (40) 347.
 treatment, (37) 50.
 varietal resistance to, (31) 643.
 eelworm, life history, (32) 900.
 exhibits, (35) 899.
 farms in New Jersey, (40) 299.
 farms, profits on, (36) 492, 893.
 field rot, studies, (35) 455.
 fields, weed control in, (40) 536.
 flakes—
 analyses, (27) 872; (29) 470; (31) 766, 864.
 and flour, manufacture, (39) 718.
 for horses, (26) 668.
 for pigs, (26) 167.
 preparation, (29) 414; (33) 162.
 flea-beetle—
 in Colombia, (37) 765.
 injurious to tobacco, (31) 452.
 notes, (29) 761; (32) 550; (33) 352; (34) 158.
 relation to tomato leaf spot, (40) 645.
 remedies, (34) 361.
 studies, (29) 258; (35) 253.
 flour—
 analyses and use in bread making, (39) 870.
 baking experiments, (26) 156.
 digestibility, (33) 361.
 industry in Germany, (26) 809.
 preparation, (33) 162.
 use, (32) 560; (34) 365.
 foliage—
 composition and feeding value, (34) 565, 664.
 for sheep, (30) 613.
 hay, composition and feeding value, (33) 759.
 fungi, infection experiments with, (27) 247.
 Fusarium—
 blight or wilt, notes, (26) 299.
 blight under irrigation, (40) 847.
 disease, notes, (38) 548.
 diseases, studies, (33) 849.
 rots and wilts, (40) 449.
 tuber and stem rot, (36) 146.
 wilt, treatment, (38) 848.
 gravy eye or matter eye, (39) 250.
 greens as stock feed, (27) 775.
 haulms as hay and silage, (32) 258.
 internal brown streak, studies, (32) 238.
 ladybird beetle, notes, (36) 654.
 late blight—
 affecting tomatoes, (29) 246.
 breeding resistance to, (28) 632.
 description and treatment, (29) 549; (38) 549.
 factors affecting germination and infection, (27) 151.
 fungus, germination and infection, (34) 246.
 fungus, persistence in the soil, (30) 49.
 hibernation of fungus, (34) 155.
 in Bohemia, (33) 851.
 in Cuba, (33) 446.
 in India, (38) 753.
 infection experiments, (29) 153.
 mode of infection, (26) 53.

Potato—Continued.

- late blight—continued.
 notes, (26) 143, 649; (27) 763; (28) 443; (29) 445; (30) 747; (32) 443; (34) 50, 843; (35) 150, 246; (36) 49, 145, 250; (37) 895; (38) 235, 649; (40) 154, 748, 845, 847.
 oospores of, (29) 846.
 relation to tomato blight, (28) 747.
 relation to weather, (36) 146.
 resistant strain, (39) 754.
 secondary infection, (30) 847.
 spread from seed potatoes, (31) 447.
 studies, (27) 544; (28) 648; (29) 550; (35) 349; (36) 749; (39) 249, 250, 650.
 treatment, (27) 446, 748; (28) 849; (29) 242, 549; (32) 343, 642; (33) 742; (35) 832; (37) 551, 749; (38) 352, 549, 848; (39) 148, 853.
 varietal resistance to, (31) 643.
 varieties resistant to, (27) 35; (28) 52.
 leaf blotch, investigations, (32) 342.
 leaf burn, relation to leaf-hopper, (40) 353.
 leaf curl, notes, (26) 446.
 leaf curl, studies, (40) 347.
 leaf roll—
 bibliography, (30) 243.
 diseases, notes, (34) 443.
 effect on product, (40) 251.
 history, (28) 648.
 inheritance, (27) 150.
 notes, (26) 648; (27) 247; (28) 52, 848; (29) 150, 550; (30) 649; (31) 52, 149, 345, 543; (32) 342, 343, 642; (38) 545.
 studies, (26) 547; (27) 351, 447, 650; (28) 150, 848; (29) 40, 246, 347; (30) 48, 243, 539; (35) 247; (36) 147, 530, 847; (37) 249; (40) 347, 543.
 leafhopper causing leaf burn, (40) 353.
 leak, studies, (35) 751.
 leak, treatment, (38) 149.
 leaves, albuminous crystalloids in, (33) 824.
 leaves and stalks, starch degradation in, (36) 126.
 leaves, invertase of, (35) 334.
 malnutrition disease, notes, (37) 752.
 material, oxidase activity, (37) 9.
 midge in Maine, (38) 60.
 mildew, treatment, (39) 148.
 mosaic disease—
 effect on yield, (37) 752, 842.
 notes, (40) 847.
 studies, (31) 52; (36) 530; (37) 47; (38) 149.
 transmission by tubers, (33) 850.
 moth, notes, (26) 59; (27) 456; (28) 355.
 moth, remedies, (34) 654.
 nematode diseases, treatment, (36) 150.
 nitrogen, nutritive efficiency, (38) 567.
 peelings, analyses, (38) 626.
 peelings, dried, analyses, (33) 568.
 pink rot, resistance to, (39) 250.
 pink rot, studies, (31) 543.
 plant, anatomy, (39) 629.
 plant, composition at various stages, (40) 240.
 plant, flosity in, (35) 49.
 planters, tests, (34) 88, 788.
 poisoning, studies, (34) 164.
 powdery dry rot, treatment, (28) 848; (35) 847.
 powdery scab—
 description, (31) 149.
 in Maine, (29) 550.
 Oregon, (33) 850.
 Virginia, (37) 753.
 West Virginia, (38) 549.
 native habitat, (34) 645.
 notes, (29) 448; (31) 243, 842; (32) 49; (33) 146; (36) 145; (40) 746.
 quarantine in United States, (36) 245, 250.
 studies, (36) 48, 249; (38) 249.
 treatment, (29) 549; (32) 147; (34) 247.
 press cake, preparation and use, (36) 367.
 products, feeding value, (40) 875.
 products for pigs, (26) 668.
 protein, hydrolysis, (26) 801.
 pulp, acidity, (35) 770.
 Pythium debaryanum in, staining, (39) 248.
 refuse—
 digestibility, (31) 767.
 dried, analyses and digestibility, (32) 168.
 effect on milk, (34) 471.
 nutritive value, (29) 665.
 steaming and ensiling, (31) 467.

Potato—Continued.

Rhizoctonia disease—

in New Jersey, (36) 147.
notes, (30) 845; (36) 145; (37) 753; (40) 746.
studies, (32) 147; (34) 350; (37) 653, 654; (38) 250.

treatment, (32) 441; (36) 49; (40) 847.

root rot, description, (32) 50.

root rot, notes, (26) 446; (29) 445.

rot due to *Phytophthora infestans*, (38) 249.

rot, notes, (26) 648; (30) 243; (31) 145; (32) 343; (34) 50.

rot, prevention, (26) 342.

rot, studies, (29) 550; (37) 651.

rust, notes, (40) 844.

rust spot, internal, (40) 848.

scab—

as affected by fertilizers, (32) 750.
notes, (30) 539, 748; (31) 243; (32) 48, 239, 443; (37) 551; (38) 149; (40) 48.

organism as affected by acidity, (40) 644.

organism, passage through digestive tract of animals, (28) 548.

relation to beet scab, (33) 547.

relation to higher bacteria, (27) 650.

relation to temperature, (33) 245.

studies, (27) 248; (32) 546.

treatment, (26) 342, 740; (27) 349; (29) 646; (30) 139, 150, 539, 540; (32) 146, 441; (33) 246; (34) 155, 744; (36) 848; (39) 755, 851; (40) 734, 847.

treatment, effect on seed vitality, (32) 230, 240.

varietal resistance to, (31) 643.

sclerotia, treatment, (40) 746.

silage—

analyses, (31) 864.

composition and digestibility, (31) 467.

notes, (38) 207.

preparation, (37) 800.

silver scurf—

description, (32) 50.

in Salt Lake Valley, (32) 643.

notes, (32) 547; (36) 145.

studies, (29) 347; (35) 455; (36) 544.

skins, impermeability, (29) 628.

skins, isolation of fat from, (29) 459.

sorters, tests, (27) 589.

spindling sprout, notes, (33) 52, 346; (39) 630.

spindling sprout, studies, (36) 530; (38) 249.

sprayers, tests, (29) 292.

stalk borer, notes, (25) 253; (35) 657.

stalk disease, studies, (40) 49.

stalk or sclerotium disease, notes, (31) 539.

stalks and berries for sheep, (28) 571.

starch—

and dextrin, manufacture, (38) 207.

baking tests, (34) 400.

color reaction, (40) 411.

effect on quality of dough, (26) 761.

farm manufacture, (37) 800.

preparation, (33) 162.

refuse for cows and pigs, (28) 372.

studies, (31) 828.

stem borer in Nova Scotia, (39) 160.

stem lesions, studies, (39) 649.

stem rot, notes, (26) 446.

stems, *Rhizoctonia* lesions on, (33) 548.

storage rot, notes, (31) 345; (32) 547; (38) 298.

storage rot, studies, (32) 441.

survey in New York, (31) 225.

tipburn and early blight, treatment, (37) 753.

tipburn, notes, (32) 544.

tops, drying, (27) 775.

tops, feeding value, (29) 665; (38) 168.

tuber diseases, descriptions and treatment, (29) 549.

tuber diseases, notes, (30) 847.

tuber moth—

in California, (40) 56.

investigations, (36) 655.

notes, (29) 855.

on imported potatoes, (39) 58.

remedies, (29) 855.

tuber rot—

and wilt, studies, (35) 246; (36) 846.

notes, (35) 653.

studies, (34) 246; (38) 149, 235.

Potato—Continued.

tuber, special growth-promoting substance, (39) 629.

tuber worm—

insensitivity to poisons, (31) 756.

life history and remedies, (27) 57.

notes, (26) 655; (27) 53; (28) 160, 355, 555; (34) 250, 851.

parthenogenesis and oviposition of, (30) 55.

remedies, (33) 351; (34) 654; (35) 358.

studies, (30) 550.

tubers—

frost necrosis, (37) 842.

morphology and histology, (29) 628.

production above ground, (35) 523.

respiration as affected by loss of water, (39) 731.

tyrosinase, notes, (35) 414.

Verticillium diseases, (37) 49; (39) 250, 852.

Verticillium wilt, studies, (33) 244.

warehouse, cooperative, in Wisconsin, (28) 895.

warehouse, plans, (28) 385.

wart, black, notes, (40) 848.

wart disease—

control in Great Britain, (31) 149.

in England, (33) 850.

in Pennsylvania, (40) 157, 543, 848.

notes, (26) 244, 448; (28) 243, 648; (30) 845; (35) 150, 649; (37) 753; (38) 546.

quarantine in United States, (36) 245.

resistant strains, (40) 630.

studies, (27) 351; (29) 448, 449; (34) 844; (39) 149.

treatment, (31) 842; (32) 444; (33) 446.

weevils from Andean South America, (30) 459.

weevils, notes, (38) 864.

wilt and tuber rot, studies, (36) 648.

wilt, studies, (38) 149; (40) 51.

Potatoes—

abnormal root formation in, (29) 217.

absorption of copper fungicides by, (28) 648.

accumulation of sugar in, (29) 219.

aerial tuber on, (31) 529.

after-ripening, (26) 626; (30) 825.

air-dried, as a feeding stuff, (36) 367.

alcohol from, (28) 715.

amylolytic activity, (34) 428.

analyses, (26) 363, 770; (27) 570; (31) 65, 433, 864.

applying fertilizing solutions to aerial portions, (30) 129.

as affected by—

boiling and steaming, (28) 363.

Bordeaux mixture, (36) 147.

copper fungicides, (28) 247.

ether, (26) 127.

Fusarium, (35) 246.

guanidin, (28) 427.

manganese, (35) 634.

poisoning, (33) 329.

potash, (31) 333.

precipitation and temperature, (28) 41.

soil moisture, (36) 336.

solanin, (28) 528.

storage, (29) 230.

sulphuric acid in irrigation water, (29) 330.

water level, (26) 620.

as basal feed for pigs, (30) 269.

food, (36) 560.

poultry food, (33) 98.

substitute for cereals, (38) 166.

wheat substitute, (39) 67, 870.

ash analyses, (29) 861.

assimilation of nitrogen by, (26) 319.

black discoloration of flesh, (28) 648.

blast-furnace flue dust for, (39) 118.

blindness in, (26) 847.

blue swamp, culture experiments, (28) 738.

breeding, (36) 636.

breeding experiments, (30) 233, 338; (33) 233; (34) 634; (36) 336; (37) 827; (39) 534, 740.

bud mutations, (27) 230.

bushel weights, (37) 889.

calcium cyanamid for, (31) 524.

catalytic fertilizers for, (27) 629.

changes in during—

drying, (33) 661.

rest period, (36) 136, 633.

sprouting, (30) 825.

Potatoes—Continued.

- classification and description, (32) 830.
- classification of varieties, (27) 31.
- cold-storage, diastase activity, (33) 315.
- composition as affected by—
 - irrigation, (28) 332.
 - sodium salts, (29) 420.
- conservation for stock food, (35) 505.
- continuous culture, (27) 734.
- cooking tests, (32) 431.
- correlations in, (39) 541.
- cost of distribution, (29) 492.
- cost of production, (26) 190; (32) 530, 688; (33) 831; (36) 232, 492; (37) 191.
- cover crops for, (39) 755.
- critical period of growing season, (39) 811.
- cull, feeding value, (38) 168.
- culture, (26) 740; (27) 196, 298, 337, 738; (28) 738; (29) 194, 336, 395, 535, 830; (30) 39, 832; (31) 231, 232, 435, 528; (32) 136, 738; (33) 40, 98, 398, 636; (34) 36, 528, 630; (36) 498, 531; (38) 437, 535, 835; (39) 834.
- culture—
 - clubs in Idaho, (27) 395.
 - clubs, notes, (28) 899.
 - contests, (34) 493.
 - contests in Canada, (31) 194.
 - experiments, (26) 38, 233, 329, 422, 536, 631, 736; (27) 335, 430, 638, 735, 833; (28) 135, 230, 532; (29) 137, 138, 226, 330, 331, 426, 427; (30) 133, 632, 828; (31) 42, 430, 732, 829; (32) 36, 132, 229, 430, 431, 526, 528, 529, 530; (33) 31, 632, 731, 830, 834; (34) 228, 229; (35) 229, 341, 527; (36) 32, 132, 228, 231, 336, 440, 636; (37) 30, 32, 37, 135, 228, 338, 436, 825; (38) 132, 336, 432, 633, 634, 735, 825; (39) 227, 230, 334, 435, 437, 632, 740, 834; (40) 429, 434, 625, 630, 732, 735.
 - for forage, (33) 34.
 - implements and machines for, (33) 891.
 - in Alaska, (29) 735; (39) 125, 127, 137.
 - Argentina, (37) 823.
 - California, (37) 139.
 - Canada, (39) 537.
 - Colorado, (37) 37; (39) 341.
 - Florida, (30) 628; (36) 835.
 - Germany, (30) 139.
 - Georgia, (34) 435.
 - Hawaii, (32) 730.
 - India, (32) 131; (39) 230.
 - Ireland, (26) 41.
 - Isle of Pines, (30) 528.
 - Kansas, (30) 735.
 - Maine, (38) 738; (40) 335.
 - Michigan, (39) 320.
 - Nebraska, (32) 631.
 - Nevada, (37) 442; (39) 138.
 - New Mexico, (40) 18.
 - northern and western States, (37) 538.
 - sand hills of Nebraska, (35) 827.
 - Scotland, (30) 735.
 - South Dakota, (39) 341.
 - southwestern Russia, (37) 338.
 - Washington, (37) 139.
 - West Virginia, (29) 744.
 - Wisconsin, (28) 738; (31) 736; (37) 442.
 - on irrigated land, (26) 636.
 - on moor soils, (39) 438; (40) 523.
 - on muck soils, (33) 33.
 - poster on, (39) 138.
 - treatise, (38) 235; (40) 36, 439, 828.
 - under dry farming, (28) 533; (30) 435; (33) 632; (36) 528, 529.
 - under glass, (37) 643.
 - under irrigation, (28) 839; (34) 528; (37) 830; (39) 442.
 - with fruit trees, (33) 534.
- Cytospora batata attacking, (39) 456.
- damaged, drying, (30) 613.
- degeneration, (36) 530; (38) 535.
- desiccated, use, (27) 210.
- desirable types, (31) 643.
- determination of disease resistance in, (27) 545.
- dietary value, (37) 800; (40) 172.
- digestibility, (28) 360, 564.
- disease resistance in, (26) 836; (38) 235.
- disease-free, production, (35) 751.
- diseased, examination, (27) 207.

Potatoes—Continued.

- diseased, yields, (26) 536.
- distribution of Fusaria on, (27) 247.
- dried—
 - analyses, (26) 770.
 - antiscorbutic properties, (40) 172.
 - digestibility, (26) 468.
 - for pigs, (38) 473.
 - notes, (35) 505.
 - use in bread making, (32) 252.
- dusky leaf bug affecting, (32) 57.
- dusting and spraying experiments, (36) 855.
- eelworm-infested, (40) 51.
- effect of change of seed, (33) 331.
- effect on—
 - composition of following wheat crop, (34) 230.
 - composition of urine, (31) 761.
 - following crop, (32) 223; (38) 337; (40) 623.
 - intestinal flora, (40) 867.
 - nitrate content of soils, (29) 818.
 - soil bacteria, (37) 421.
 - soil moisture, (28) 321; (34) 17.
- electroculture experiments, (26) 835; (27) 231; (30) 828; (31) 428; (39) 230; (40) 428.
- endophytic endodermal fungus in, (32) 643.
- ensiling, (32) 364, 567.
- ensiling with lactic acid, (33) 268.
- extraction of starch from, (28) 208.
- factors affecting culinary quality, (30) 63.
- factors affecting health, (34) 746.
- false chinch-bug on, (39) 760.
- feeding for cheese production, (29) 475.
- feeding value, (37) 800.
- ferrous sulphate as top dressing for, (30) 735.
- fertilizer experiments, (26) 31, 232, 324, 329, 422, 423, 424, 425, 428, 522, 536, 631, 636, 727, 817, 836 (27) 32, 125, 137, 321, 324, 421, 422, 530, 626, 628, 629, 724; (28) 230, 431, 520, 535, 723, 735; (29) 23, 125, 129, 213, 227, 228, 318, 330, 427, 635, 727, 821; (30) 38, 124, 134, 220, 229, 327, 528, 626, 820, 821, 832; (31) 31, 36, 41, 129, 133, 328, 333, 421, 431, 820, 822, 829, 833; (32) 132, 325, 431, 739; (33) 33, 219, 237, 286, 326, 517, 625, 728, 831; (34) 24, 294, 518, 519, 622, 723, 820; (35) 34, 126, 218, 323, 425, 427, 430, 519, 629, 724; (36) 25, 121, 132, 217, 220, 425, 529; (37) 138, 215, 228, 337, 436, 521, 533, 635, 739; (38) 32, 220, 432, 433, 520, 540, 634, 820; (39) 130, 230, 327, 328, 334, 427, 435, 621, 625, 738 740; (40) 126, 134, 229, 330, 331, 332, 421, 431, 434, 515, 524, 621, 622, 725, 734, 735.
- fertilizer experiments under irrigation on sandy soils, (33) 286.
- fertilizers for, (32) 335.
- flower-stalk position, (40) 631.
- following alfalfa, (39) 130.
- following alfalfa hay and pasture crops, (40) 430.
- food value, (29) 463.
- for farm stock, (30) 175.
- fattening swine, (35) 376.
- horses, (28) 363.
- late planting, (37) 436.
- milk production, (35) 174.
- pigs, (31) 667; (38) 372, 535.
- recropping sugar-beet land, (40) 431.
- forcing by electricity, (26) 136.
- foreign, danger from, (26) 836.
- formaldehyde treatment, (30) 697.
- frosted and decayed, starch from, (39) 802.
- frozen and decayed, utilization, (37) 806.
- fumigation with carbon bisulphid, (31) 756.
- Fusaria of, (31) 447.
- germination studies, (30) 30.
- grading, (38) 34, 535, 834.
- graphic summary of seasonal work, (39) 495.
- green manuring experiments, (29) 330; (31) 438; (32) 217; (39) 31, 816.
- ground, analyses, (31) 65.
- ground seaweed for, (40) 724.
- growth as affected by—
 - Azotobacter, (28) 814.
 - electric light, (28) 228.
 - electricity, (30) 827.
 - manganese, (30) 823; (32) 725.
 - sulphur, (29) 215.
- growth—
 - in a cave, (31) 521.
 - acetylene gas, (27) 827.

Potatoes—Continued.

- growth—continued.
 - in artificial light, (28) 735.
 - relation to temperature and moisture, (40) 19.
 - shade, (29) 130.
 - of basal and terminal buds, (39) 536, 629.
 - on acid soil, (40) 324.
- hail injury to, (35) 734.
- handling and marketing, (36) 136.
- handling and storing, (39) 149.
- harvesting and storing, (30) 197; (36) 336.
- harvesting experiments, (26) 836.
- hereditary characters in, (28) 632.
- home-mulched v. northern seed, (32) 631; (33) 336.
- hypertrophy-structure in, (27) 151.
- identification of varieties, (33) 297.
- immature, for seed, (37) 337.
- importance of clean seed, (37) 96.
- improvement, (26) 437, 636; (28) 43; (32) 830; (38) 827.
- improvement by seed selection, (32) 230, 630.
- improvement, tuber-unit method, (28) 835.
- in the dietary, (33) 695.
- ingrowing, sprouts of, (26) 828; (28) 734.
- inheritance of high starch content, (27) 500.
- insects affecting, (26) 553, 631; (29) 259, 336; (30) 240, 753; (31) 232; (33) 352; (36) 550; (37) 157; (38) 558; (39) 358, 461, 466, 861; (40) 753.
- internal spotting, (27) 349.
- irrigated, manuring experiments, (40) 421.
- irrigation, (28) 484; (29) 736; (31) 328; (39) 442.
- irrigation experiments, (27) 531; (28) 130, 133, 135, 230, 588, 827; (29) 32, 138, 182, 226, 425, 426; (32) 37, 186, 225, 531; (33) 286, 827, 884; (34) 229, 721; (35) 636; (36) 35; (37) 30, 37, 84, 740, 822; (38) 320, 633; (39) 132; (40) 331.
- judging, (36) 97.
- lady beetles affecting, (30) 255.
- lessons on, (28) 598.
- liability to disease, (40) 157.
- lightning injury, (33) 345; (40) 645.
- lime for, (28) 223.
- liming experiments, (29) 223; (37) 733.
- lining and loading cars, (40) 138.
- loss in boiling, (34) 660.
- manurial value of tops, (39) 836.
- market types, (38) 535.
- marketing, (31) 893; (33) 40, 693; (34) 288; (38) 535, 834.
- marketing cooperatively, (29) 392; (33) 491; (34) 288.
- methods of analysis, (28) 510.
- methods of variety testing, (26) 436.
- microscopic tests, (27) 341.
- mulching experiments, (33) 526.
- mutation in, (31) 137.
- nematodes affecting, (26) 748.
- new nematode infesting, (38) 147.
- notes, (29) 338.
- on Caribou loam, (39) 335.
- origin, (26) 529; (31) 137, 833.
- origin and early culture, (38) 332, 535.
- origin of cultivated varieties, (28) 530.
- osmotic pressure in, (30) 228.
- oxidases in, (26) 547; (31) 748.
- Pearl, bastard type, (31) 833.
- phloem necrosis in, (33) 52.
- phosphorus content, (27) 461.
- physiological abnormalities of, (30) 747.
- planting—
 - dates, (37) 317, 732; (40) 31, 431.
 - dates and distances, (40) 630.
 - experiments, (26) 833; (31) 132; (37) 538; (38) 634.
 - whole v. cut tubers, (38) 534.
- potash fertilizers for, (26) 526.
- potash hunger, (37) 800.
- preparation for exhibition, (28) 738.
- preservation, (39) 316.
- preservation by pressure, (32) 416.
- preservation with lactic acid starter, (31) 467.
- production—
 - and consumption, (39) 838.
 - in 1911, (26) 595.
 - in United Kingdom, (26) 793.

Potatoes—Continued.

- production—continued.
 - in United States, (26) 293.
 - 1918 program, (38) 834.
- propagation by cutting, (36) 636.
- protection against frost, (27) 421.
- purin content, (40) 205.
- quality as affected by weather, (26) 415.
- quarantine regulations, (31) 149.
- radioactive fertilizers for, (31) 129; (35) 628.
- raising, illustrated lecture, (39) 498.
- rate of seeding tests, (27) 335.
- raw, antiscorbutic value, (40) 565.
- rejuvenescence, (30) 730; (40) 732.
- relation between size of seed and yield, (26) 434.
- relation of nitrogen to protein content, (28) 636.
- relation of tops to roots, (31) 733.
- relation to climate, (28) 27.
- relative yielding capacity, (40) 625.
- removal of blossoms, (40) 138.
- respiration and decay, (29) 565; (32) 111.
- respiration investigations, (34) 523.
- rest period in, (30) 825; (32) 129; (36) 223; (40) 224.
- root systems of, (31) 515.
- rotation experiments, (33) 429, 829; (36) 528, 829; (38) 129; (40) 229, 331, 430, 734.
- score card for, (28) 43.
- second crop, (39) 341.
- seed—
 - certification, (33) 336; (38) 535; (40) 846.
 - certification in Germany, (34) 444.
 - cold storage v. cellar storage, (29) 336.
 - cutting and sprouting, (40) 135.
 - disinfection, (32) 528.
 - for fall planting, (39) 535.
 - for Ontario, tests, (39) 838.
 - formaldehyde disinfection, (30) 539, 540.
 - from light soils for heavier soils, (33) 531.
 - from sprayed plants, (40) 732.
 - Government farm in India, (40) 625.
 - growing in Nova Scotia, (38) 646.
 - handling and storing, (28) 638.
 - improvement, (29) 230; (37) 823.
 - inspection and certification, (31) 345.
 - inspection in Wisconsin, (31) 736.
 - judging, (28) 243.
 - local v. imported, (29) 331; (40) 434.
 - peelings and cuttings for, (40) 138.
 - plat method of improvement, (39) 740.
 - preparation, (39) 536, 740; (40) 135, 630.
 - production, (37) 753, 800; (39) 841.
 - production and handling, (29) 141.
 - propagation, (39) 534.
 - selection, (28) 535, 738; (29) 37; (30) 197, 228, 637; (34) 338, 494; (35) 396, 696; (36) 638.
 - selection and preparation, (32) 739.
 - selection and treatment, (31) 333.
 - sprouted v. unsprouted, (28) 535; (30) 333, 832.
 - sprouting before planting, (32) 35; (33) 331; (34) 530.
 - storage, (38) 437.
 - tests, (39) 131, 334, 337, 535, 740.
 - treatment, (39) 337, 740, 755; (40) 51, 450, 734, 746, 847.
- seeding experiments, (29) 224, 226, 425; (30) 134; (33) 227; (38) 132, 534; (39) 127, 337, 536; (40) 732, 734.
- seeding experiments with skins, (39) 537.
- seedling, culture, (31) 643.
- selection, (38) 197; (39) 541.
- selection experiments, (33) 233, 526, 698; (37) 32, 228, 240; (38) 433; (39) 740; (40) 429, 523.
- selection of edible types, (30) 39.
- sensitivity to poison, (35) 457.
- small v. large tubers for planting, (33) 834.
- Solanum commersonii resembling, (28) 130.
- spraying, (29) 194; (37) 538; (38) 135; (39) 345, 541; (40) 747, 748.
- spraying—
 - experiments, (27) 237, 738; (28) 346, 433; (29) 845; (30) 49, 449, 847; (31) 137; (32) 158, 229, 431, 444, 547; (33) 40, 336; (35) 527, 831; (36) 49, 847; (37) 228; (38) 235; (39) 337, 755, 853.
 - v. dusting, (32) 551; (33) 336, 636; (34) 158.
 - with Bordeaux mixture, (26) 548.
 - with lime arsenate, (40) 164.
- sprouted, food poisoning by, (40) 557.

Potatoes—Continued.

sprouting—

- as affected by chemicals, (32) 829.
- in relation to soil moisture, (35) 527.
- tests, (26) 330.

starch content, (35) 108.

- steamed and dried, for pigs, (30) 470.
- steamed, composition and digestibility, (31) 467.
- steaming and ensiling, (31) 467.
- storage, (29) 696; (38) 89; (39) 770.

storage—

- and marketing, (36) 195.
- cellars, (40) 191.
- cellars, description, (38) 391.
- experiments, (29) 425; (38) 835; (39) 639.
- house, plans, (38) 137.
- in sand, (31) 736.

stored, chemistry of, (32) 111.

stored, new insect pest of, (32) 57.

studies for schools, (27) 196.

subsoiling experiments, (37) 732.

sugar in, (33) 223, 310.

sulphur as fertilizer for, (30) 139.

surplus, utilization, (31) 149.

susceptibility to diseases, (28) 535.

susceptibility to Irish blight, (26) 636.

swamp, description and culture, (36) 637.

symbiosis and tuberization in, (30) 730.

testing disease-resistant qualities, (28) 53.

thinning and spacing experiments, (33) 526.

thinning experiments, (34) 736.

translocation of mineral constituents, (34) 427.

transpiration as affected by sprays, (31) 825.

transportation regulations, (30) 346.

treatise, (28) 738; (33) 531; (37) 533, 543, 645.

treatment with—

- corrosive sublimate, (29) 242.
- formaldehyde, (27) 650.
- liquid air, (38) 128.

tuber color in, (36) 147.

tuber formation in, (27) 224; (30) 332.

tuberous growth at expense of roots, (35) 330.

use as food, (33) 364.

use in bread making, (33) 162, 865; (40) 556, 863, 864.

utilization, (38) 535.

utilization in Europe, (32) 830.

v. artichokes for forage, (31) 433.

valuation, (26) 710.

variations in, (26) 433.

varietal response to Bordeaux mixture, (31) 643.

- varieties, (26) 233, 331, 424, 437, 536, 630, 631, 636, 836; (27) 32, 35, 334, 530, 531, 532, 637, 736, 833; (28) 431, 535, 636, 827; (29) 138, 222, 225, 226, 228, 336, 425, 426, 427, 530, 630, 635, 735, 736, 830; (30) 38, 139, 228, 333, 434, 525, 735, 829; (31) 42, 133, 333, 430, 438, 528, 732, 733, 829, (32) 35, 36, 41, 132, 225, 229, 333, 431, 528, 529, 530, 539, 630, 738, 827; (33) 330, 728; (34) 231, 734; (35) 229, 637, 742; (36) 32, 36, 37, 132, 136, 228, 231, 435, 436, 437, 529, 636, 735; (37) 30, 32, 41, 131, 135, 138, 227, 329, 338, 435, 436, 531, 645, 825; (38) 31, 32, 34, 132, 229, 336, 432, 433, 436, 632, 634, 828, 835.

varieties—

- for Michigan, (37) 538.
- South Dakota, (39) 341.
- Washington, (40) 741.
- Wisconsin, (28) 42.
- identification, (40) 631.
- in America, (32) 830.

varieties resistant to—

- blight, (33) 849.
- blight and frost, (32) 443.
- disease, (31) 643.
- late blight, (27) 35; (28) 52; (30) 748.
- rot, (26) 342.
- wart disease, (26) 847; (29) 448.

- variety tests, (39) 127, 128, 137, 227, 229, 230, 337, 437, 438, 535, 738; (40) 31, 134, 330, 429, 431, 434, 523, 524, 631, 734.

variety tests, difficulties in, (29) 41.

Verticillium disease of, (32) 239.

water requirements, (26) 129; (29) 826; (32) 127.

"water" variety, (39) 740.

weather factor for, (35) 114.

whole v. cut for planting, (27) 638.

wild, of Arizona, breeding experiments, (40) 131, 241.

wild, selection and improvement, (29) 535.

Potatoes—Continued.

winter storage, (35) 495.

wound stimulation and closure in, (26) 826.

yield as affected by—

- color of seed, (33) 433.
- hilling, (29) 431.
- removal of tops, (37) 138.
- size of seed, (26) 232; (36) 231.
- source of seed, (29) 739; (31) 833.
- wind-breaks, (28) 40.

yield—

- in relation to rainfall, (34) 319.
- in relation to weather, (33) 716; (35) 613; (38) 317.
- on alfalfa stubble, (33) 828.

yields, (29) 228; (40) 735.

Potentilla fruticosa, notes, (29) 741.

Potassium canadense, analyses, (27) 371.

Potomac River—

pollution of, (35) 286.

sediments, analyses, (30) 223.

Potsherds, effect on nitrification, (40) 24.

Poudrette, fertilizing value, (27) 337; (29) 129; (35) 135, 323.

Poudro, analyses and fertilizing value, (30) 26.

Poultry—see also Chickens, Ducks, Fowls, Hens etc.

accounts, (37) 699.

animal food for, (33) 572.

appliances, construction, (27) 773.

appliances, description, (33) 733; (34) 377.

artificial insemination, (31) 474.

artificial light for, (40) 280.

as a food stuff, (28) 459.

as affected by—

- rations from single plant sources, (33) 368.
- restricted rations, (36) 866.

as commercial enterprise, (39) 480.

associations, county, notes, (28) 795.

associations, notes, (27) 400.

barred breeds, history, (27) 72.

bibliography, (26) 669; (28) 593; (33) 575.

breeders in Montana, (36) 473.

breeding, (31) 569.

breeding—

- and management, (33) 77; (35) 668.

contest, (37) 71; (39) 780.

experiments, (26) 168; (30) 571; (32) 571; (34), 177; (37) 768.

for egg production, (26) 571; (29) 874.

for standard and utility values, (40) 876.

from selected stock, (38) 775.

in South Australia, (26) 168.

review of literature, (29) 276; (34) 268.

breeds—

- class study, (39) 397.

modern, (29) 471.

origin and history, (27) 572.

building at Cornell University, dedication, (29) 70.

buildings—

- at Ohio Station, (31) 472.
- description, (26) 591.

Bustin Black Pretors, notes, (31) 270.

canning, (38) 715.

caponizing, (29) 168.

care and feeding, (28) 173.

care and management, (29) 371; (30) 872; (31) 769; (32) 173; (34) 377, 569, 669, 770; (35) 172, 275; (39) 268, 279.

care on the farm, (38) 678.

cecal and hepatic infections in, (36) 483.

changes in during storage, (30) 259.

clubs—

- for girls, (27) 395.

in Arkansas, (33) 95.

in Oklahoma schools, (26) 497.

in the South, (35) 195.

organization, (28) 599; (30) 395.

suggestions for, (31) 793, 794.

cold storage, statistics, (28) 869.

constitutional vigor in, (28) 367; (31) 668.

contest for boys and girls, (28) 194.

cooling rack, metal, description, (29) 87.

coop feeding for market, (39) 278.

crate—

- fattening experiments, (28) 172.

fattening v. pen fattening, (28) 172,

feeding, (36) 70.

Poultry—Continued.

- cost of—
 - cold storage, (27) 164.
 - keeping, (26) 771.
 - rations, 1915-16, (39) 780.
- cottonseed poisoning, (39) 886.
- crossing experiments, (26) 168.
- daylight culling, (39) 794.
- demonstration car work, (33) 273.
- demonstration train in North Wales, (30) 495.
- disease, investigations, (33) 389.
- diseases—*see also specific diseases.*
 - and hygiene, notes, (31) 781.
 - and parasites in Guam, (35) 878.
 - cholera-like and typhoid-like, (40) 685.
 - handbook, (35) 284, 379; (37) 778.
 - important, (39) 686.
 - in British East Africa, (30) 576.
 - in New Jersey, (39) 791.
 - manual, (30) 687.
 - nature and treatment, (34) 383.
 - notes, (28) 382; (33) 97, 98, 273, 880; (37) 693, 876.
 - notes and treatment, (29) 385.
 - post-mortem examinations, (37) 82.
 - prevention and treatment, (27) 585.
 - treatise, (31) 88; (33) 681; (34) 280, 481, 881; (38) 781; (39) 393.
 - treatment, (29) 574.
- dressed—
 - handling, (27) 62.
 - handling and marketing, (29) 472.
 - refrigeration in transit, (30) 71.
- dressing and marketing, (29) 472.
- ectoparasites of, (32) 481.
- encyclopedia, (32) 173.
- experiments, (26) 770; (27) 374, 773; (28) 773; (29) 273, 574; (30) 71; (31) 472; (32) 469, 570 (33) 76, 762; (34) 176; (35) 377; (36) 70; (37) 681; (38) 677.
- external parasites of, (30) 786; (33) 353; (34) 470; (39) 85.
- fancy points v. utility, (33) 172.
- fancy table, in France, (30) 175.
- farm, Government, at Beltsville, Maryland, (28) 369.
- farming in New Jersey, (40) 570.
- farms—
 - cooking boilers for, (32) 591.
 - disinfection, (36) 885.
 - management, (37) 872.
 - small, developing, (34) 294.
 - survey in New Jersey, (38) 173.
- fattening—
 - commercially, (26) 76; (30) 470.
 - crates, construction, (29) 472.
 - experiments, (38) 373.
 - for market, (28) 172; (34) 178.
- feather crested types, studies, (30) 773.
- feeding, (26) 164, 876; (32) 264, 572; (34) 377; (37) 471, 699; (38) 95; (40) 372.
- feeding—
 - and housing, (27) 492.
 - and management, (29) 70.
 - experiments, (26) 669; (27) 279, 674, 773; (28) 669; (29) 275, 472, 672; (30) 470; (31) 568; (32) 868; (33) 77, 299, 380, 763; (34) 173, 376, 664; (35) 273, 377, 773; (36) 372, 373, 668, 770; (37) 70, 865; (38) 71, 678; (39) 376.
 - stations, descriptions, (26) 77.
 - textbook, (37) 94.
 - war rations, (38) 476.
- feeds—
 - analyses, (26) 72, 165, 665; (28) 265, 364; (29) 270, 467, 570, 769; (30) 68, 169, 377; (39) 780; (40) 571, 665.
 - and feeding, treatise, (28) 769.
 - home-grown, (39) 278.
 - palatability and digestibility, (36) 473.
 - southern, mineral content, (39) 577.
 - Texas-raised, (37) 871.
- fighting, booklet, (30) 175.
- finishing for market, (37) 872.
- fish meal for, (33) 169.
- flock, backyard, feeding, (40) 473.
- food value and uses, (36) 463.
- grading, (27) 374.
- grit, analyses, (38) 666.
- growth data, (30) 370, 467.

Poultry—Continued.

- hatching and rearing by artificial means, (29) 373.
- house—
 - colony, description, (27) 892.
 - description, (38) 677.
 - equipment, (35) 690; (38) 593.
 - roller curtain for, (40) 387.
- houses—
 - and appliances, handbook, (26) 188, 591; (38) 190.
 - and equipment, (37) 887.
 - construction, (26) 188, 386; (27) 773, 793; (28) 86, 686; (29) 293; (30) 389, 471, 794, 872; (31) 93, 786; (32) 590; (33) 98, 273, 691, 783; (34) 192, 391, 590, 789; (35) 690, 792; (36) 190, 788; (37) 289, 389, 491, 696; (38) 190.
 - description, (27) 89, 279, 374; (31) 291; (32) 888; (34) 177.
 - for prairie farms, (35) 690.
 - notes, (30) 390.
 - open v. cotton-front, (32) 469.
 - pamphlet, (31) 893.
 - plans, (28) 386.
 - plans and specifications, (29) 689.
 - temperature records, (36) 71.
 - tests, (33) 762.
- housing, (39) 794; (40) 292, 485.
- housing experiments, (29) 471.
- husbandry—
 - collegiate instruction, (37) 495.
 - courses in, (40) 492, 599.
 - instruction in secondary schools, (36) 794; (37) 394.
 - laboratory instruction, (37) 395.
 - papers on, (27) 675.
 - work in New Jersey, (37) 71.
- improvement, (28) 369; (29) 472; (37) 871.
- inbreeding effects, (30) 71.
- inbreeding experiments, (33) 572.
- industry—
 - importance of, (35) 275.
 - in Canada, (33) 93.
 - Connecticut, (37) 872.
 - Egypt, (27) 472.
 - European countries, (26) 473.
 - Germany, (29) 574; (33) 296, 572.
 - Indiana, (30) 71.
 - Ireland, (26) 271.
 - Montana, (36) 473.
 - New Jersey, (36) 689.
 - New York State, (33) 273.
 - Scotland, (27) 279.
 - Spain, (28) 270.
 - United States, (26) 293; (29) 774; (30) 471.
 - present conditions, (40) 78.
 - statistics, (28) 578.
- inheritance—
 - in (27) 870; (30) 71; (32) 671; (37) 772; (40) 177.
 - of size in, (32) 399, 572.
 - of spangling in, (37) 771.
- injurious to peach trees, (34) 144.
- insects affecting, (31) 243.
- insects for feeding, (38) 71.
- instruction, home projects in, (34) 395.
- instruction in Ireland, (28) 793; (34) 196.
- instructors and investigators, international association, (27) 106.
- intestinal parasites, remedies, (38) 83.
- Italian breeds, description, (26) 876.
- judging, (33) 172.
- judging standards in relation to utility, (39) 75.
- judging, teaching, (39) 397.
- killing, (28) 270.
- laboratory manual, (40) 693.
- late summer care, (33) 98.
- lice and mites, remedies, (38) 184.
- lice, eradication, (40) 754.
- line breeding, (33) 77.
- live and dressed, standards, (38) 294.
- live, cost of distribution, (29) 492.
- live, transportation, (26) 271.
- management, (27) 279, 773; (28) 173, 599; (29) 574; (30) 395; (31) 568; (40) 177.
- management—
 - experiments, error factor in analysis, (39) 780.
 - for winter egg production, (32) 869.
 - handbook, (40) 876.
 - on a small holding, (30) 90.
 - on the farm, (37) 368.

Poultry—Continued.

manure—

- analyses, (36) 120; (38) 23.
- average yearly production, (40) 77.
- for carnations, (27) 844.
- handling, (38) 298.
- production, (37) 682.
- treatment and use, (29) 820; (32) 322; (33) 218.

use, (34) 494.

value and utilization, (39) 278.

value, preservation, and use, (30) 175.

market, production, (29) 574.

marketing, (28) 773; (29) 574; (37) 682.

marketing—

- by parcel post, (40) 372.
- cooperatively, (26) 92; (38) 494.
- in Minnesota, (33) 492.
- in New York, (38) 293.

meat, inspection, (32) 585.

mites and lice, notes, (37) 357.

monthly receipts, (26) 94, 190, 595.

mung bean pasture for, (40) 729.

notes, (26) 572; (29) 573; (30) 175, 373, 471, 571, 872; (31) 76, 298, 340, 473; (32) 767; (33) 97, 672, 698; (34) 494.

on farms in United States, (31) 167.

organization, war emergency, (39) 482.

parasites, notes, (33) 483.

pedigreeing, (39) 378.

pigeon, and pet stock fairs and exhibitions in United States, (28) 796.

plant—

at New Jersey Stations, (28) 788.

description, (37) 895.

standard unit, (39) 780.

preparation for exhibition, (37) 71.

prices as affected by cold storage, (28) 871.

production—

for war emergency, (38) 94.

illustrated lecture, (34) 196.

treatise, (32) 570.

products, marketing, (35) 892; (37) 391.

profitableness under farm conditions, (26) 771.

program for 1918, (39) 176.

protection against predatory enemies, (30) 175.

purebred, marketing, (33) 77.

raising, (26) 369, 473; (27) 279, 299; (29) 171, 574; (33) 273; (38) 276.

raising—

and preparing for market, (27) 676.

business methods, (40) 280.

Flemish system, (35) 275; (40) 280.

for broilers, (39) 577.

in Alabama, (28) 73.

Alaska, (29) 770.

city yards, (39) 374, 378, 781.

Colorado, (38) 776.

India, (28) 736.

Missouri, (26) 271.

Porto Rico, (29) 666; (31) 664.

the South, (32) 570.

the Tropics, (31) 494.

town and country, (28) 796; (38) 173.

Washington, (28) 265.

Wisconsin, (34) 873.

lecture on, (29) 774.

lessons on, (26) 473; (28) 393; (32) 597; (35) 592, 594; (36) 597.

mineral requirements, (39) 577.

on the farm, (39) 176, 377, 881.

outline for study of, (33) 697.

promotion, (26) 271.

textbook, (33) 598; (35) 93.

treatise, (38) 776.

rations, balancing, (37) 271.

rations, computing, (34) 377.

reading course, (28) 795.

refrigeration, (28) 663; (33) 660.

refrigeration in United States, (27) 461.

roosting closet, (27) 599.

salt poisoning in, (39) 680.

sanitation, (38) 287.

school in Mexico, (26) 798.

school in Rio de Janeiro, (30) 194.

secondary sexual characters, changes in, (33) 272.

selection, (34) 74, 564, 870; (36) 762.

sex-limited inheritance in, (26) 878; (27) 876.

sex-linked inheritance in, (27) 573; (31) 368; (33) 271.

Poultry—Continued.

sex nature of, (29) 466.

shipping, (39) 377.

shipping into Germany, (26) 669.

show, first in America, (32) 265.

shows and associations, (33) 872.

societies in England, (32) 792.

sprouted grain for, (34) 294.

sprouted oats for, (39) 74.

standards, relation to utility, (37) 775.

statistics in Ireland, (34) 291.

statistics in United States, (28) 390.

storage, (39) 770.

"summer poisoning," (36) 884.

supply and consumption in Ithaca, N. Y., (33) 572.

survey of—

a country village in New York, (34) 669.

of Jackson County, W. Va., (33) 173.

textbook, (30) 696; (31) 474, 568; (36) 597.

tonics, analyses, (26) 568.

tonics, inspection and analyses, (39) 70.

treatise, (26) 270, 473, 669; (27) 72, 73, 674; (28) 270, 470, 673; (29) 69, 193, 371, 573; (30) 270, 572; (31) 270; (33) 77, 173, 473; (34) 269, 377, 470; (37) 769, 775.

undrawn, sale, (32) 456.

variations in, (30) 374.

war-time rations, (37) 573.

winter management, (34) 770.

work at Oregon Station, (29) 70.

world's congress, (40) 499.

Poverty weed, eradication, (40) 430.

Powder Valley, irrigation project, (27) 414.

Powdery mildew—see also special hosts.

characteristics, (30) 537.

relation to host, (33) 244; (35) 844; (37) 749; (38) 645.

relation to light, (30) 747.

Power—

alcohol, crops for production, (40) 524.

application to road transportation, (31) 90.

for farms, (29) 688; (31) 291.

from the sun, (31) 688.

laying out and plowing with, (31) 187.

mechanical for farms, (30) 789.

mechanical, in German agriculture, (30) 387.

plant apparatus, testing, (35) 889.

plant, electric, at Powersite, Mo., (28) 716.

transmission poles, preservation, (26) 644.

Pox in domestic animals, treatment, (26) 578.

Praepodes vittatus, notes, (34) 753.

Prairie—

and woodland, ecology of tension zone, (38) 521.

berries, cell number in, (27) 733.

berries, improvement, (30) 343.

berry, crossing with *Solanum nigrum*, (34) 146.

berry, improvement, (28) 739; (32) 538.

chicken, notes, (27) 355.

dogs—

control, (29) 651; (34) 57; (39) 59, 460.

control in Colorado, (28) 450.

destruction, (28) 653; (32) 648; (35) 52.

extermination, (30) 697.

prevalence in Colorado, (28) 652; (30) 249; (35) 51.

susceptibility to rabies, (38) 80.

systematic account, (35) 551.

grass—

alkali tolerance, (40) 719.

culture under irrigation, (33) 228.

notes, (33) 834.

phosphorus compounds in, (31) 864.

grove, isolated, paper on, (26) 643.

hay—

analyses, (29) 270; (30) 671; (36) 65.

digestibility, (31) 863.

digestibility and productive value, (37) 865.

making and baling, (39) 231.

mineral constituents, digestibility, (40) 769.

western, analyses, (27) 170.

plants—

assimilation in, (36) 734.

ecological histology, (35) 820.

evaporation in, (26) 821.

transpiration in, (26) 821; (36) 734.

soils, sampling, (28) 215.

Prairies—

and mountain grasslands, comparison, (38) 824.

preparation for grain crops, (30) 829.

- Praon—
cocoons, fungus growing from, (40) 459.
construction of cocoon, (37) 856.
- Prays—
citri, notes, (30) 252; (32) 56.
oleaeus, notes, (30) 455.
- Precipitates—
apparatus for washing, (36) 504.
ignition, (27) 713.
washing device for, (37) 503.
- Precipitation—*see also* Rainfall, Snowfall, *etc.*
and altitude in the Sierra, (26) 27.
and halos at Wauseon, Ohio, (32) 810.
and run-off, Ishikari River, Japan, (29) 813.
at New Orleans, La., (32) 614.
at State College, Pa., (35) 507.
atmospheric, electricity of, (34) 413.
averages for large areas, (26) 27.
chart, new, (38) 209.
charts, preparation, (37) 807.
chlorin and sulphur content, (30) 422.
daytime and nighttime, (36) 717.
effect on—
drainage water, (26) 619.
insects, (37) 355.
sugar beets, (26) 738.
yield of alfalfa, (37) 717.
yield of cereals, (28) 41.
factor, seasonal, (39) 611.
in British Columbia, (34) 320; (38) 283
central Ohio, (40) 117.
China, (36) 19.
Illinois, (39) 319.
1913, (32) 810.
north Germany, (36) 208.
northern Europe, (31) 816.
Russian Turkestan, (31) 812.
southeastern Rocky Mountain slopes, (35) 619.
Texas Panhandle, (30) 318.
United States, (30) 318, 815.
western Kansas, (30) 318.
observations, working up, (37) 513.
reactions, equilibrium in, (34) 779; (37) 877.
relation to—
run-off and evaporation, (40) 810.
stream flow, (29) 121, 812; (35) 116.
tree growth, (30) 417, 445.
winter wheat yields, (38) 14.
seasonal, (40) 616.
- Precipitin—
and sensitizin, relationship, (34) 778.
antigen, production from bacteria, (38) 483.
for differentiating insoluble proteins, (27) 410.
reaction—
diagnostic value, (32) 375.
for testing seeds, (28) 204.
notes, (27) 680; (34) 579.
test, diagnostic value, (26) 283.
- Precipitins—
bacterial, notes, (26) 676.
notes, (32) 78.
production, (29) 581; (33) 84.
production by the fowl, (39) 388.
relation to complement fixation, (30) 478.
relation to other immunity reactions, (36) 478.
specificity, (26) 482.
- Precipitoids, inhibition of precipitation by, (26) 175.
- Precooling plant, description, (35) 391.
- Pregnancy—
biological investigations, (27) 174, 577.
corpus luteum of, in swine, (40) 663.
diagnosis, (27) 577, 881; (28) 777; (29) 377, 408, 476, 477, 778; (30) 276; (31) 179, 180, 278, 279, 378, 877; (32) 80, 372, 474, 578, 579, 875; (33) 176, 207, 477; (34) 80, 81, 565, 577, 780; (35) 73, 179, 879; (36) 381; (37) 478; (38) 181, 581, 684; (39) 284, 583, 680, 886.
early, effect on development of animals, (33) 265.
effect on growth, (40) 877.
in mares, serodiagnosis, (32) 185.
metabolism during, (31) 663.
nitrogen metabolism during, (35) 473.
- Premnortypes solani—
n.g. and n.sp., description, (30) 459.
notes, (38) 864.
- Prenelepis minutula atomus fullawayi n.var., description, (27) 264.
- Prepotency in animals, (32) 861.
- Preptoceras mayfieldi n.sp., description, (34) 264.
- Preservatives—
and other chemicals in foods, (33) 66.
chemical, detection and use, (26) 609.
chemical, notes, (27) 64.
detection in—
butter, (31) 811.
caviar, (36) 561.
fats, (31) 508.
milk, (32) 413; (37) 113.
milk and its products, (26) 806.
effect on—
barnyard manure, (28) 220.
butter and margarin, (26) 778.
cider, (30) 665.
guaiac test for milk, (26) 712.
oxygen in water, (26) 418.
peroxidase reaction of milk, (32) 412.
examination, (30) 258.
food, advantages and disadvantages, (33) 577.
food, physiological significance, (30) 364.
wood, tests, (32) 841.
- Preserve jars, sealing, (39) 717.
- Preserved fruit, "springing" of tins, (40) 208.
- Preserves—
examination, (28) 166; (39) 611, 612.
manufacture, (30) 613.
preparation, (35) 419.
preparation and judging, (30) 259.
recipes, (32) 560.
- Preserving—
and canning, recipes, (36) 113.
industry in United States, (31) 67.
sirups for, (37) 15.
treatise, (32) 253; (38) 114; (39) 614, 716.
- Pressure—
change charts, (35) 419.
coagulation of albumin by, (32) 417.
effect on—
bacteria, (38) 584.
hydrogen electrode potential, (36) 503.
microorganisms, (32) 416.
pipes for water conveyance, (30) 187.
vertical, distribution in earth, (35) 581.
- Preventive medicine and hygiene, treatise, (38) 882.
- Price fixing—
and cost of farm products, (39) 687.
in England, (40) 487.
- Prickly—
ash, notes, (30) 145.
pear, *see* Cacti.
- Primitive Husk corn, culture experiments, (28) 532.
- Primordia of chloroplasts and leucoplasts, (39) 332.
- Primrose—
Chinese, formation of pigments in, (27) 633.
evening, rusts of, (37) 552.
- Primula—
acaulis, inheritance of heterostylism in, (34) 226.
culture in Alaska, (29) 743.
hybridization experiments, (30) 329.
kewensis and its allies, genetic behavior, (35) 818.
sinensis—
flower pattern in, (34) 731.
giant form, (28) 228.
inheritance in, (34) 822; (36) 729; (38) 822.
linkage in, (36) 629.
variegation in, (34) 226.
- Princeton University Farm, notes, (28) 99.
- Prioninae, catalogue, (30) 458.
- Prioninae, larvae of, (33) 360.
- Prionomerus calceatus, notes, (37) 560.
- Prionoxystus robiniae, notes, (27) 658; (28) 159; (31) 550; (35) 356; (40) 161, 853.
- Prionus—
californicus, notes, (32) 651; (35) 656.
laticollis, notes, (27) 755.
- Triophorus—
acricaulis, notes, (26) 856; (28) 351.
padi, feeding habits, (28) 553.
- Prisoners, feeding in Germany, (35) 368; (36) 363.
- Pristaulacus strangulariae n.sp., description, (38) 164.
- Pristocera armifera, notes, (36) 360.
- Pristomeridia agilis, parasitism, (33) 353.
- Pristomerus—
hawaiiensis, notes, (29) 253.
vulnerator, parasitic on gipsy moth, (31) 652.
- Pristoscelis texanus, notes, (28) 451.

- Privet**—
anthracnose, notes, (31) 641.
autumn coloration of, (31) 34.
crown gall, notes, (36) 47.
formation of fatty acids in, (26) 801.
leaves, formation of fats in, (29) 201.
mite, notes, (36) 859.
swamp, culture for wild ducks, (33) 251.
- Privies**—
construction, (36) 892.
sanitary, construction and care, (29) 88.
sanitary, description, (31) 787; (34) 88; (35) 189, 887; (37) 287; (38) 84, 85, 567.
- Privy vaults**, flies frequenting, (39) 766.
- Proceras sacchariphaga**, notes, (38) 465.
- Prociphilus**—
approximatus n.sp., description, (37) 850.
bumellae, notes, (34) 357.
corrugatus on Rosaceae, (32) 848.
fitchii and P. pyri, synonymy, (37) 661.
fraxini-dipetaleae, notes, (34) 356, 453.
pyri, notes, (34) 854.
spp., studies, (39) 657.
tessellata, notes, (27) 257.
- Proctacanthus milbertii**, predaceous on alfalfa caterpillar, (32) 58.
- Proctophyllos trisetosus** n.sp., description, (34) 66.
- Prodecatoma**—
cruzi n.sp., description, (32) 352.
sp., description, (37) 59.
- Prodenia**—
eridania, notes, (28) 654.
litura—
in Philippines, (30) 252.
notes (27) 862; (29) 456; (30) 252.
remedies, (28) 355.
studies, (40) 62.
ornithogalli, notes, (33) 352.
spp., notes, (30) 356.
- Prodiptosis fitchii** n.sp., description, (28) 657.
- Prodoxus barberella** n.sp., description, (33) 748.
- Produce exchanges**—
function, (40) 791.
speculation on, (30) 591.
- Profenusa collaris**, see Cherry sawfly leaf-miner.
- Proflavin**—
antiseptic value, (39) 586, 680.
oleate in wound treatment, (40) 882.
- Project method in science teaching**, (40) 897.
- Projects**, definition, (36) 194.
- Prolapse of oviduct in poultry**, (39) 791.
- Prolin**, fate in the animal body, (28) 568.
- Prometheca cumingii**, notes, (30) 56; (40) 260.
- Promethea** moth, notes, (30) 655.
- Promusca**, erection, (34) 253.
- Prony brake**, description and use, (29) 488.
- Protopachyneuron Girault**, notes, (40) 760.
- Protopachyneuron n.g. and n.sp.**, notes, (38) 565.
- Prophanurus**—
minutissimus, notes, (31) 459.
n.spp., descriptions, (31) 459.
- Propionamid** as a source of ammonia, (29) 723.
- Propionic acid**—
bacteria in dairy products, (28) 276.
decomposition by sunlight, (30) 431.
determination, (38) 506.
effect on bread fermentation, (27) 268.
in silage, (28) 608.
rôle in digestion, (36) 763.
- Propionitrile**, assimilation by plants, (26) 32.
- Propyl alcohol**—
as a disinfectant, (40) 581.
in silage, (28) 608.
- Prosagrotis delorata**, notes, (32) 448.
- Prosimulium** spp., notes, (31) 254.
- Prosmoridea elongatus** n.g. and n.sp., description, (34) 363.
- Proso**—
analyses, (33) 361.
as a table food, (33) 361.
bread, digestibility, (37) 364.
culture—
experiments, (27) 137; (29) 424; (30) 136; (33) 633; (37) 34; (39) 435.
in Texas Panhandle, (29) 429 (35) 440.
in Utah, (38) 230.
varieties, (32) 334; (36) 33.
water requirements, (32) 127.
- Proso pis**—
juliflora, culture experiments, (36) 340.
juliflora, notes, (28) 643.
root growth in relation to oxygen, (40) 30.
spicigera, in Punjab, (34) 46.
- Proso podes fugax**, notes, (35) 659.
- Prosothrips cognatus**—
in investigations, (33) 354.
n.sp., description, (30) 658.
- Prospaltella**—
aurantii, notes, (26) 247; (28) 754.
aurantii, parasitic on orange scale, (26) 554.
berleseii—
behavior in Italy, (27) 564.
notes, (28) 457; (29) 854; (35) 760.
on Diaspis, (39) 465, 663.
parasitic on mulberry scale, (34) 456.
remedies, (32) 755.
fasciata n.sp., description, (38) 460.
laborensis, studies, (28) 754.
lounsburyi n.sp., description, (36) 462.
lounsburyi, notes, (38) 467.
murtfeldtii, notes, (27) 556.
olivina, notes, (26) 149.
- perniciosi**—
life history, (33) 257.
n.sp., description, (29) 459.
notes, (30) 661; (31) 356; (35) 54.
parasitic on San José scale, (29) 758.
parasitism, (32) 245.
- peruviana** n.sp., description, (29) 359.
spp., notes, (28) 159.
spp., studies, (36) 759.
- Protalbinic acid**, nitrogen distribution in, (38) 310.
- Protapanteles**—
chrysiippi n.sp., description, (26) 352.
n.sp., notes, (35) 465.
- Protargionia**, new genus, description, (26) 247.
- Protascus colorans** n.g. and n.sp., studies, (33) 548.
- Protease**—
in alfalfa, (32) 411.
in guinea pig and rabbit serums, (35) 382.
in mammary gland, (32) 411.
- Proteases**—
nephelometry in study of, (30) 410.
serum, studies, (34) 674.
- Protein**—
absorption in typhoid fever, (35) 369.
alcohol-soluble, determination in wheat flour, (27) 111.
ammonia, determination in water, (33) 501.
anaerobic decomposition, (27) 226.
anaphylaxis, treatise, (32) 79.
as affected by bromin, (34) 803.
as factor in poultry feeding, (31) 568.
assimilation—
by pigs, (32) 170.
in plants, (27) 525.
review of investigations, (29) 567.
availability, determination by feeding experiments, (30) 97.
barley, transformation during brewing processes, (32) 23.
biological value and metabolism, (28) 66.
blood, studies, (36) 773; (37) 375.
carbon, utilization by the body, (26) 564.
catabolism—
as affected by glucose, (29) 663.
in inanition, diminishing, (26) 465.
studies, (29) 164.
compounds, physiological value, (26) 764.
condition of body, relation to diet, (26) 663.
copper compounds, (37) 8.
derivatives, detection, (26) 804.
derivatives, physiological action, (34) 71.
diet as protection against tuberculosis, (31) 84.
diet, effect on creatin-creatinin metabolism, (39) 571.
differentiation, technique and methods, (26) 676.
digestibility, determination, (37) 673.
digestion—
and absorption in animals, (33) 566.
by pepsin, (27) 9.
by serums, (35) 179.
inhibition by adsorbed tin, (37) 470.
emaciation following injection of, (35) 179.
extraction from wheat flour, (34) 610.
extracts for diagnostic cutaneous tests, preparation, (38) 482.

Protein—Continued.

- fed pregnant swine, effect on offspring, (32) 366.
- feeding, effect on amino acids in tissues, (31) 661; (40) 562.
- food products, determination of decomposition in, (33) 112.
- food, rôle of fats in utilization, (28) 262.
- foods, selection, (37) 864.
- foods, use in kidney diseases, (32) 460.
- free amino groups in, (33) 201; (34) 501.
- free milk, nitrogen in, (40) 608.
- free milk, substitutes for, (40) 463.
- gains in the body, studies, (26) 664.
- Hopkins-Cole reaction for, (34) 713.
- horse serum—
 - as anaphylactic antigens, (36) 877.
 - changes in, (26) 374.
 - in milk of immunized sheep, (27) 680.
- intake, effect on—
 - creatin excretion, (37) 469; (38) 569.
 - growth, (33) 262.
 - muscular work, (33) 166.
 - uric acid formation, (33) 462.
- iodized, preparation, (35) 201.
- loss from grass during curing, (32) 111.
- metabolic relation to glucose, (33) 261, 868; (34) 366.
- metabolism, (27) 464; (32) 359.
- metabolism—
 - after excessive water ingestion, (32) 663.
 - after hunger, (32) 66.
 - and energy metabolism, relation, (32) 563.
- metabolism as affected by—
 - air breathed, (32) 663.
 - carbohydrate and fat, (26) 765; (34) 762.
 - complement, (30) 478.
 - mastication, (33) 366.
- metabolism—
 - bibliography, (26) 764.
 - digest of data, (35) 165.
 - in fever and during work, (32) 564.
 - in omnivora and herbivora, (32) 566.
 - monograph, (28) 167.
 - of infants, (35) 766.
 - the fetus, (26) 363.
 - white races in Tropics, (33) 366.
 - yeast and mold fungi, (33) 202.
 - relation to thyroid secretion, (29) 868.
 - sparing action of carbohydrates on, (36) 364.
 - studies, (26) 158, 359, 764, 869, 870; (28) 664, 665; (31) 661; (39) 772.
 - utilization of ammonia in, (29) 62, 365.
- minimum—
 - for farm animals, (26) 664.
 - in dairy rations, (31) 371.
 - review of literature, (33) 68.
 - studies, (30) 366; (33) 262, 868.
- mixtures, inhibitory action on anaphylaxis, (34) 578.
- nitrogen—
 - fertilizing value, (39) 726.
 - of honey, determination, (26) 207.
 - table for feeding stuffs, (33) 711.
- nutrition of lambs, (33) 761.
- nutrition, studies, (27) 68.
- phosphorus-containing, necessity in diet, (32) 561.
- poison, effect on dogs, (30) 180.
- quotient, constancy during digestion and starvation, (40) 660.
- rations, utilization by cows, (39) 75, 381.
- requirements—
 - daily, of men, (32) 66.
 - for milk production, (31) 173.
 - in bread diet, (31) 860.
 - in nutrition, (31) 263.
 - of dairy heifers, (33) 274; (35) 871.
 - growing cattle, (26) 768.
 - higher animals and man, (35) 858.
 - infants, (34) 68.
 - workingmen, (33) 662.
- resorption in the cell organism, (31) 361.
- retention in relation to diet, (35) 765.
- solutions—
 - electrometric titrations in, (39) 611.
 - refractive indexes, (28) 501.
- split products in relation to immunity and disease, treatise, (30) 379.
- starvation, effect on amino acid content of tissues, (31) 661.

Protein—Continued.

- storage—
 - in liver, (31) 464.
 - relation to acidosis, (33) 368; (34) 261.
 - substances—
 - as protective agents for enzymes, (26) 504.
 - complement fixation with, (40) 286.
 - decomposition in milk, (33) 714.
 - methods for study of composition, (39) 676.
 - synthesis, (37) 108.
 - supplements for corn gluten, (36) 666.
 - suspensoid, precipitation by ions, (31) 607.
 - synthesis, (31) 10.
 - synthesis—
 - by lactic acid bacteria, (35) 373.
 - by means of enzymes, (34) 708.
 - by yeasts and fungi, (27) 525.
 - in plant cells, (28) 428.
 - relation of carbohydrates to, (40) 562.
 - tissue, cleavage by blood serum of other animal species, (37) 478.
- Proteins—
- Adamkiewicz reaction, (40) 507.
 - agglutination, (29) 502.
 - autolysis in killed plants, (27) 426.
 - biological differentiation, (26) 176.
 - biological individuality of, (26) 876.
 - body and foreign, absorption, (32) 66.
 - chemical changes during digestion, (27) 768.
 - chemical constitution, (27) 803; (31) 607.
 - chemistry—
 - as basis of the life process, (40) 201.
 - of, (28) 201, 801.
 - of, treatise, (29) 408.
 - progress in, (30) 201.
 - cleavage—
 - by microorganisms, (28) 503.
 - in flour, (35) 265.
 - products, biological action, (28) 279.
 - products, fatigue producing, (29) 568.
 - products, utilization, (26) 869.
 - studies, (26) 764.
 - coagulation by—
 - heat, (26) 306; (29) 501, 502.
 - ultraviolet rays, (29) 130, 131; (30) 110.
 - color reaction for, (26) 201; (32) 20.
 - constitution, (29) 715.
 - decomposition—
 - and hypersusceptibility, (28) 777.
 - by electricity, (26) 307.
 - in soils, (36) 25.
 - density and solution volume, (29) 108; (31) 804.
 - detection, (26) 804; (28) 503; (29) 715.
 - detection in saliva, (32) 20.
 - determination, (27) 9; (39) 311.
 - determination—
 - Adamkiewicz test, (31) 807.
 - in butter, (27) 209.
 - honey, (26) 208.
 - meat, (35) 315.
 - milk, (31) 114, 413.
 - muscle, (35) 614.
 - serum of domestic animals, (32) 778.
 - urine, (36) 508.
 - of tyrosin in, (40) 113.
 - dynamic action, (40) 866.
 - effect on—
 - baking qualities of flour, (30) 556.
 - blood sugar in phlorizin diabetes, (35) 863.
 - gaseous metabolism in man, (28) 569.
 - growth of pigs, (28) 98.
 - intestinal flora, (40) 867.
 - nutrition and growth, (33) 462.
 - production and composition of milk, (26) 79.
 - reaction of iron salts, (28) 411.
 - uric acid metabolism, (40) 175.
 - wheat gluten, (26) 67.
 - flesh, products of hydrolysis, (39) 201.
 - foreign, fate in anaphylactic reaction, (38) 79.
 - foreign, liberation of antibodies on injection of, (40) 180.
 - formation—
 - and cleavage, in human body, (26) 69
 - by tubercle bacilli, (31) 284.
 - in animal body, (35) 371.
 - in plants, (27) 226, 634; (31) 224.
 - in ripening seeds, (26) 729.
 - localization in plants, (29) 323.
 - of hydrocyanic acid in, (30) 802.
 - treatise, (34) 708.

Proteins—Continued.

- formol-titrametric investigations, (31) 713.
- from cereals and milk, effect on growth, (33) 465.
- from different foods, value, (26) 763.
- from different sources—
 - comparison, (37) 864.
 - effect on growth, (33) 262.
 - for milk production, (33) 275; (36) 174, 671.
 - value, (33) 367; (35) 368, 562; (36) 372.
- from various grains, digestibility, (33) 361, 564, 758.
- gastric digestion of, (31) 161.
- growth-promoting value, expressing numerically, (40) 765.
- heat-coagulable and water-soluble, in milk, (38) 612.
- heat coagulation of, (28) 568.
- hydrolysis, (28) 607.
- hydrolysis by—
 - enzymes, study of products, (40) 611.
 - pancreatic enzymes, (35) 201.
- hydrolysis in presence of—
 - aldehydes, (38) 201.
 - carbohydrates and aldehydes, (36) 108.
 - extraneous materials, (39) 611.
- hydrolysis—
 - products, nutritive value, (28) 167.
 - studies, (27) 501.
 - tryptic, measurement, (31) 711.
- identification in solutions, (26) 201.
- importance in egg production, (32) 99.
- in animal serums, (30) 68.
- mixed rations, digestibility, (32) 69, 70.
- nutrition of growing pigs, (32) 71, 72, 73.
- the diet, (32) 857.
- the diet, treatise, (28) 567.
- insoluble, differentiating, (27) 410.
- isolated—
 - effect on growth of rats, (31) 69.
 - maintenance experiments with, (28) 863.
 - value in the diet, (34) 368.
- lysin content, (31) 559.
- maintenance experiments with, (29) 767.
- methods of analysis, (26) 22; (28) 501; (33) 408; (34) 505; (35) 415.
- need of under different conditions, (33) 868.
- new, in milk, (38) 611.
- nutritive value as affected by starch and fats, (40) 562.
- of animal tissues, adequacy, (39) 665, 873.
- blood, studies, (39) 388.
- chick pea seeds, analyses, (28) 460.
- cooked meat, digestibility, (32) 256.
- corn, efficiency, (39) 873.
- corn, nutritive value, (28) 759; (29) 62; (32) 164.
- corn, utilization, (26) 358.
- cottonseed, utilization, (26) 662.
- flour, chemical constitution, (34) 803.
- flour, studies, (27) 807.
- gliadin, modifications in, (29) 608.
- insects, value for poultry, (38) 71.
- legumes, utilization, (26) 564.
- Liebig's meat extract, (27) 363.
- linseed meal, hydrolysis, (26) 201.
- malting barley, (39) 232.
- meat powder, utilization, (26) 663.
- meat, separation, (27) 498.
- milk, *see* Milk proteins.
- muscle juice, studies, (30) 766.
- muscle, specific heat of, (33) 566.
- peanuts, (37) 8, 468, 501.
- potato, autolysis, (26) 801.
- rations, calculating, (39) 167.
- rice, reagent for, (29) 881.
- rice, studies, (27) 166.
- seeds, nutritive values, (39) 665, 666.
- seeds, studies, (40) 69, 563.
- swede turnips, composition and methods of analysis, (37) 410.
- wheat and almond, studies, (40) 660.
- yeast and sucrose, relation, (32) 803.
- physical chemistry, treatise, (38) 708.
- plant, autolysis, (26) 801.
- plant, precipitation, (26) 482.
- precipitation, (27) 107, 303, 804; (31) 504.
- pure, toxicity and nutritive value, (40) 463, 464.
- pure vegetable, effect on rats, (32) 875.

Proteins—Continued.

- purified, behavior toward proteolytic enzymes, (36) 108.
- quality, relation to milk production, (40) 572.
- role in glycogen formation, (31) 763.
- role in growth, (30) 366; (35) 269.
- salt-soluble, determination in flour, (32) 808.
- serum, of different animals, (28) 875; (32) 861; (35) 372.
- serum-precipitin reaction of, (26) 482.
- specific dynamic action, (37) 266.
- specificity, (36) 411.
- studies, (27) 501; (39) 801.
- sulphur linkages in, (26) 306.
- toxic action, (27) 466.
- toxic and nontoxic fractions of, (28) 880.
- transformations in—
 - intestinal canal, (31) 468.
 - plant and animal organisms, (28) 631.
 - yeast, (31) 223; (35) 634.
- treatise, (26) 801.
- tyrosin content, (29) 465.
- uniformity in structure, (28) 631.
- utilization as affected by fasting, (29) 268.
- utilization by different animal species, (40) 464.
- value in animal nutrition, (27) 276.
- value in feeding stuffs, (26) 363.
- value in nutrition, (26) 764.
- vegetable—
 - biological reactions, (30) 680, 778; (31) 377; (34) 577; (35) 679; (36) 380.
 - nutritive value, (26) 155; (36) 865.
 - review of investigations, (28) 460.
 - studies, (34) 762; (40) 463.
 - utilization by the animal organism, (33) 565.
- Proteinuria, Bence-Jones, investigations, (38) 569.
- Protocephalidae, revision, (32) 853.
- Proteolysins and hemolysins, relation, (40) 286.
- Proteolysis, studies, (35) 204.
- Proteolytic—
 - action as affected by halogens, (28) 504.
 - action, methods of examination, (36) 316.
 - action of pancreas preparations, determination, (32) 710.
 - enzymes of plants, inhibitors for, (37) 204.
 - ferments, method of study, (26) 107.
 - ferments of blood, origin, (37) 478.
 - index of human blood leucocytes, (26) 83.
- Proteopteryx—
 - bolliana, notes, (38) 762; (39) 557.
 - bolliana, studies, (38) 157.
 - willigana, notes, (38) 257.
- Proteose intoxications and injury of body protein, (37) 167; (39) 572.
- Proteoses—
 - absorption by digestive apparatus, (38) 366.
 - effect on cobra venom hemolysis, (36) 276.
 - in soils, (34) 325.
 - studies, (26) 23.
- Proterrhinidae, catalogue, (26) 560.
- Proteus—
 - alveicola n. sp., description, (37) 360.
 - vulgaris, cleavage of gluten by, (31) 711.
 - vulgaris, nitrogen assimilation by, (31) 711.
- Protist organisms, infective granule in, (30) 577.
- Protocalliphora—
 - azurea infesting birds, (40) 351.
 - azurea, studies, (34) 359.
 - larvae parasitizing nestling birds, (40) 647.
- Protomyces—
 - andinus, notes, (35) 651.
 - helminthiae n. sp., description, (32) 842.
 - n. spp., descriptions, (40) 155.
- Protoparce—
 - carolina, relation to tomato leaf spot, (40) 645.
 - saxa, *see* Tobacco worm, southern, and Tomato worm.
- Protoplasm—
 - and gelatin, similarity in behavior, (37) 431.
 - as affected by bivalent cations, (33) 328.
 - as affected by Schumann rays, (33) 224.
 - cause of death in, (28) 631.
 - electric charge of, (34) 525.
 - living, chemical dynamics of, (30) 823; (32) 625.
 - nature of, (36) 526.
 - of plant cells, (34) 33.
 - organization and polarity of, (28) 765.
 - permeability, (33) 127.
 - permeability to ions, (26) 823.
 - permeability to salts, (39) 25.

- Protoplasm**—Continued.
 permeability to water, (36) 823.
 physical properties, interpretation, (37) 325.
 relation to environment, (28) 326.
 swelling, studies, (40) 520.
 water absorption by, (38) 502.
- Protoplasmic**—
 contractions resembling plasmolysis, (29) 134;
 (30) 130.
 streaming, stimulation by light rays, (35) 130.
- Protopulvinaria** spp., parasites of, (26) 553.
- Protozoa**—
 as affected by heat, (31) 26.
 counting, new method, (33) 809.
 determination in soils, (29) 123.
 disease transmitting, treatise, (31) 478.
 effect on ammonification, (28) 719.
 effect on bacteria in soils, (28) 330.
 flagellated and ciliated, tissue-invasive powers,
 (40) 186.
 flagellated, rôle in bird diseases, (36) 483.
 flagellates in cecal and liver infections in birds,
 (36) 781.
 from sewage-sick soils, notes, (29) 316.
 in rice soils, (33) 23.
 in ruminants' stomachs, (30) 577.
 in soil—
 activity, (34) 422; (36) 216.
 as affected by lime, (30) 127.
 as affected by toluene, (36) 814.
 as reduction index, (40) 214.
 counting, (30) 826; (33) 809; (34) 513; (39) 814.
 determination, (29) 123.
 inactivity, (30) 322.
 notes, (30) 399; (31) 420.
 paper on, (30) 399.
 review of investigations, (37) 213.
 separation, (34) 217.
 studies, (31) 26, 420, 516; (32) 320, 619; (33)
 621; (34) 20; (35) 214.
 infecting bees, (27) 459.
 infectious, notes, (29) 676.
 intestinal, transmission by flies, (38) 563.
 life history, (38) 580.
 media for multiplication of, (33) 809.
 of vertebrates and invertebrates, (32) 177.
 parasitic in *Bufo regularis*, (30) 680.
 pathogenic—
 handbook, (26) 246, 865; (27) 460, 551.
 notes, (26) 276.
 review of investigations, (28) 178.
 textbook, (28) 78; (36) 177.
 treatise, (27) 575.
 relation to—
 plant growth, (32) 423.
 soil bacteria, (29) 123; (30) 517; (33) 515; (34)
 326; (36) 322, 422, 518, 622.
 rôle in plants, (33) 425.
 separation of species, (27) 780.
 so-called "infective granules" of, (35) 280.
 toxic action of copper compounds of amino
 acids on, (37) 375.
 treatise, (29) 360.
- Protozoan**—
 diseases, immunization, (26) 676.
 diseases, in Tonkin, (26) 677.
 germ plasms, notes, (26) 876.
 infections, infective granule in, (26) 883.
 infections of intestinal tract, goblet cells in, (37) 280.
- Protozoology**—
 review of literature, (27) 77.
 textbook, (27) 356.
 treatise, (26) 882.
- Provancher, Abbé**, biographical sketch, (40) 259.
- Provender, analyses**, (26) 72, 665; (28) 265, 364, 465;
 (30) 67; (32) 259; (34) 169, 371, 467; (35) 374, 562;
 (38) 369, 665.
- Prunase**, occurrence in Java beans, (28) 502.
- Prunasin** as affected by enzymes, (28) 503.
- Prune**—
 aphids, remedies, (32) 649.
 blight, notes, (34) 648.
 brown rot—
 investigations, (35) 249.
 notes, (28) 544.
 treatment, (32) 645; (38) 454.
 industry in Oregon, (29) 148.
 juice, detection in vanilla extracts, (26) 111.
 kernels, microscopic identification, (28) 565.
 Monilia blight, studies, (34) 351.
- Prune**—Continued.
 mushroom root rot, notes and treatment, (28)
 748.
 orchards—
 protection against frost, (29) 147.
 renovation, (37) 41.
 root disease, notes, (36) 649.
 rust in southern California, (34) 352.
 rust, notes, (36) 845.
 stones, hydrocyanic acid content, (27) 11.
 twig borer, notes, (32) 651.
 twig miner, notes, (35) 253.
- Prunes**—
 ash analyses, (29) 861.
 bacterial gummosis, (39) 151.
 benzoic acid in, (33) 15.
 brown bark spot on, (39) 251.
 bud injury, (40) 52.
 composition as affected by irrigation, (29) 236.
 culture, (32) 45.
 culture in New York, (35) 836.
 culture in southern Utah, (30) 41.
 culture in southwestern Washington, (31) 441.
 destruction by black scale, (26) 555.
 dried—
 analyses, (30) 861.
 inoculation experiments with brown rot
 fungus, (33) 247.
 microbiology, (34) 460.
 preparation and use, (29) 462.
 drying, (29) 148; (37) 114, 715.
 drying methods, (27) 146.
 effect on composition of urine, (31) 761.
 evaporation, (39) 16.
 fertilizer experiments, (37) 41.
 frost injury, (37) 344.
 handling and shipping (34) 534.
 insects affecting, (27) 857.
 pear thrips affecting, (40) 547.
 pollination, (36) 139; (40) 836.
 pollination by bees, (36) 536; (38) 747.
 pruning, (33) 837; (35) 41.
 sodium nitrate for, (40) 741.
 tree census in Washington, (40) 340.
- Pruning**—*see also special trees and shrubs.*
 directions for, (26) 539.
 effect on—
 fruit bud formation, (33) 735; (37) 646.
 set of fruit, (38) 42.
 sweet peas and tomatoes, (29) 339.
 investigations, methods, (37) 239.
 monograph, (33) 837.
 notes, (28) 639; (32) 234, 743, 751, 835; (33) 339;
 (34) 833; (37) 344.
 paper on, (38) 540.
 problems in Hood River Valley, (37) 41.
 summer, (33) 98; (35) 696.
 treatise, (33) 838; (37) 41, 242, 344; (38) 539.
 wounds, dressing for, (32) 835; (38) 143.
- Prunus**—*see also Cherries and Plums.*
 breeding experiments, (28) 540.
 crown gall resistance in, (36) 352; (37) 655.
 domestic, silver leaf disease of, (34) 648.
 eriogyna n.s.p., description, (30) 41.
 hybrids, heredity in, (28) 540.
 laurocerasus, hydrocyanic acid in, (29) 133.
 mume, chloranthyl of, (26) 343.
 native American species, (33) 837.
 new canker disease of, (37) 251.
 oils, composition, (36) 803.
 pubescent-fruited species of Southwestern
 States, (30) 41.
 spinosa, seashore thicket formation by, (35) 635.
 spp., crown gall affecting, (28) 447.
 tomentosa, culture experiments, (27) 343.
 virginiana, black knot of, (30) 750.
- Prussian blue**—
 determination in tea, (33) 15.
 fertilizing value, (26) 323.
- Prussian Chamber of Agriculture**, organization and
 status, (31) 193.
- Prussic acid**, *see Hydrocyanic acid.*
- Psacaphora**—
 cambiella n.s.p., description, (33) 748.
 engelella, life history, (33) 655.
- Psallidium maxillosum**, notes, (31) 655.
- Psalliota**—
 campestris, composition, (26) 802.
 campestris, prevalence in South Africa, (29) 461.
 sp., zymase formation in, (39) 733.

- Psallus ambiguus*, notes, (32) 849; (40) 60.
Psalterium in ruminants, anatomy and histology, (26) 573.
Psathyrella ampelina—
 notes, (26) 750.
 studies, (31) 746.
Pseudanthonomus—
crataegi, notes, (26) 759.
validus, notes, (31) 351.
validus, studies, (34) 852.
Pseudoanidia (*Aspidiotus*) *trilobitiformis*, notes, (28) 752.
Pseudopanteles eticellae n.sp., description, (26) 352.
Pseudaphelinus n.g., description, (40) 61.
Pseudaphycus n.spp., descriptions, (35) 858.
Pseudapocyrtus n.g. and n.spp., descriptions, (28) 561.
Pseudhomalopoda prima n.g. and n.sp., description, (34) 857.
Pseudiglyphomyia coptodisciae n.sp., description, (36) 260.
Pseudoagglutination, notes, (30) 205.
Pseudoamphistomum danubiense, infection of pigs with, (38) 82.
Pseudoanthrax bacilli—
 and anthrax bacilli, relationship, (30) 682.
 biology, (33) 579.
 biology and diagnosis, (34) 781.
Pseudobackleg, studies, (26) 883.
Pseudobranchisticha semiaurea n.g. and n.sp., description, (34) 363.
Pseudococcobius—
chrhorni, notes, (40) 359.
 n.g. and n.spp., descriptions, (35) 857.
 n.spp., descriptions, (40) 359.
Pseudococcus—
acris, notes, (27) 755; (30) 53.
adonidum, notes, (38) 464.
bakeri, notes, (29) 454; (35) 357.
bakeri, studies, (40) 650.
calceolariae, notes, (29) 53.
citri, see *Citrus mealybug*.
crotonis, studies, (39) 156.
(Dactylopius) perniciosus, injurious to cotton, (27) 454.
filamentosus, notes, (30) 549; (32) 349.
grassi n.sp., description, (33) 653.
hyacinthi, bacillus resembling, (31) 127.
jessica n.sp., description, (36) 551.
 n.spp., descriptions, (35) 757; (40) 262.
nicotianae n.sp., description, (29) 758.
sacchari in Mexico, (40) 57.
sacchari, notes, (26) 60; (29) 52, 854; (38) 556.
 sp. from Japan in New Jersey, (34) 355.
 sp., notes, (31) 350.
 sp. on citrus fruits, (34) 62.
 sp. on sugar cane, (34) 753.
 spp. in Crimea, (33) 652.
 spp. in Ohio, (34) 59.
 spp., notes, (27) 155; (28) 158, 555; (31) 249.
 spp., parasites of, (40) 359.
 spp., studies, (34) 162.
yerba-santae n.s.p., notes, (29) 455.
Pseudocoryphalus n.g. and n.sp., description, (38) 163.
Pseudodiaporthe coffeae, notes, (38) 51.
Pseudoglobulin, transformation into globulin, (37) 77.
Pseudohylesinus—
 n.g. and n.sp., description, (38) 163.
 spp., studies, (39) 65.
Pseudomonas—
avenae, notes, (40) 643.
calcis, notes, (33) 631.
campestris, notes, (29) 547; (34) 644; (37) 550; (40) 844.
campestris, studies, (26) 546.
cerasus n.sp., notes, (26) 144.
cerasus, notes, (29) 154; (30) 749.
cerasus, studies, (39) 151.
citri, see *Citrus canker*.
erodii n.s.p., investigations, (32) 53.
fluorescens in soils, (37) 516.
fluorescens, notes, (29) 157.
fragarioidea, organism resembling in milk, (26) 371.
gladioli n.s.p., studies, (29) 845.
hyacinthi, notes, (40) 844.
juglandis, studies, (28) 349; (34) 545.
medicaginis in Utah, (31) 642.
Pseudomonas—Continued.
olivae, description, (28) 246.
papulans n.sp. on apple, (38) 251.
phaseoli—
 notes, (37) 550.
 studies, (28) 846; (34) 746.
 treatment, (37) 248.
pisi n.sp., description, (35) 847.
polycromigena n.sp., description, (32) 644.
pruni, notes, (30) 245.
radicola—see also *Bacillus radicola*.
 factors affecting vitality, (26) 824.
 notes, (27) 26, 828.
seminum n.sp. on *Pisum*, (39) 147.
seminum, notes, (40) 844.
 sp., notes, (30) 149.
 sp. on soy beans, (37) 842.
 sp., relation to barley blight, (35) 845.
 spp., ammonifying power, (31) 317.
 spp., nutrient medium for, (27) 729.
 spp., on iris and hyacinth, (40) 844.
 spp. on vegetables in Ontario, (37) 150.
stewarti, studies, (40) 846.
subretus n.s.p., description, (28) 628.
tritici n.s.p., description, (39) 454.
tumefaciens, notes, (31) 746, 845; (40) 53, 252.
vascularum, notes, (28) 746.
Pseudomphale—
anceylae n.s.p., notes, (36) 254.
 n.spp., descriptions, (34) 66; (36) 555.
Pseudopanteles eticellae, parasitism, (27) 553.
Pseudoperonospora humuli n.n., notes, (32) 442.
Pseudopeziza—
medicaginis, notes, (30) 648; (31) 746; (33) 846.
medicaginis, treatment, (30) 538.
ribis, notes, (30) 246.
ribis, studies, (33) 347.
ribis, treatment, (32) 842.
tracheiphila—
 notes, (28) 55; (37) 246, 555.
 studies, (30) 148, 452.
 treatment, (26) 145; (27) 250.
trifolii—
 description and treatment, (39) 754.
medicaginis, notes, (28) 52.
 notes, (30) 538; (32) 443.
Pseudophoenix sargentii, notes, (29) 341.
Pseudopteroptrix imitatrix n.g. and n.sp., description, (40) 265.
Pseudorabies—
 notes, (31) 579.
 occurrence in Brazil, (28) 184.
Pseudorhyssa sternata n.g. and n.sp., description, (34) 758.
Pseudotachinomyia webberi n.g. and n.sp., description, (37) 763.
Pseudotsuga taxifolia, thinning experiments, (32) 47.
Pseudotuberculosis—
 in guinea pigs, (37) 377.
 horses, (37) 378.
 rodents, pathology, (32) 882.
 swine, (37) 82.
 notes, (34) 184.
Pseudotuberculous enteritis of bovines, diagnosis, (26) 783.
Pseuromphale eudami n.s.p., description, (39) 869.
Psila rosae, notes, (32) 650.
Psila rosae, remedies, (31) 158.
Psiloecephala melampodia, notes, (28) 158.
Psilopa petrolei, notes, (27) 862.
Psiloptera fastuosa, notes, (27) 863.
Psithyrus—
 n.spp., descriptions, (28) 758.
 spp. in bumblebee nests, (33) 658.
 spp., notes, (28) 562.
Psocidae, fumigation, (39) 161.
Psophocarpus, liming experiments, (36) 229.
Psoriasis vulgaris, relation to diet, (31) 463.
Psorophora (*Janthinosoma*) *sayi* as anthrax carrier, (39) 161.
Psoroptes—
cervinae n.s.p., description, (33) 680.
communis, life history, (35) 678.
communis ovis, life history, (33) 384.
communis ovis, notes, (27) 182; (29) 159.
cuniculi, notes, (35) 80.
Psychoda—
albimaculata n.s.p., description, (29) 159.
cinerea, life history, (34) 651.

- Psychoda*—Continued.
 spp., biology, (32) 552.
 spp. on sewage filters, (40) 356.
Psychonotua sp., notes, (29) 652.
- Psychotria*—
bacteriophila, nitrogen-fixing bacteria in leaves, (27) 225.
 spp., bacterial enlargements on leaves, (26) 451.
 spp., symbiosis with plants, (26) 545.
- Psylla*—
buxi, notes, (35) 54.
isitis, life history, (31) 755.
isitis, life history and remedies, (29) 854.
mali, see *Apple sucker*.
pyri, see *Pear psylla*.
 remedies, (34) 253.
schizoneuroides, destructive to oranges, (28) 655.
- Psylla mali*, see *Apple sucker*.
- Psyllid*, gall-producing, from Syria, (30) 251.
- Psyllidae*—
 American, notes, (26) 148, 755.
 catalogue, (31) 59.
 notes, (28) 60.
 of Hawaiian Islands, (40) 262.
 Japan, (26) 455.
 New World, (31) 453.
 vicinity of Washington, D. C., (40) 354.
 palaearctic, catalogue, (30) 455.
- Psylliodes*—
 affinis, studies, (35) 253.
 attacking *Cruciferae* in central Europe, (30) 161.
attenuata, biology and remedies, (30) 255.
punctulata—see *Hop flea beetle*.
- Psyllopa punctipennis*, life history, (31) 755.
- Psyllopsis fraxinicola*, notes, (26) 146.
- Pteridium aquilinum*, chemistry, and anatomy of, (34) 522.
- Pteris aquilina*—
 injurious to horses, (37) 182.
 life history and eradication, (36) 339.
 toxic effect on horses, (38) 589.
- Pterocarpus*—
marsupium, notes, (29) 443.
santalinus, descriptive account, (38) 146.
- Pterocommini*—
 review, (36) 253.
 synopsis, (35) 256.
- Pterodontia flavipes*, life history, (36) 757.
- Pteromalidae* of Australia, (39) 154.
- Pteromalinae*, synopsis, (30) 661.
- Pteromalus*—
caridei—
 for control of orange papilio, (40) 62.
 n.sp., description, (31) 355.
dynaster, parasitic on alfalfa weevil, (31) 61.
egregius, notes, (27) 456; (29) 252.
eurymi n.sp., description, (31) 355.
eurymi, parasitic on alfalfa caterpillar, (32) 58.
hemleuca n.sp., description, (38) 165.
puparum, oviposition and feeding in, (26) 458.
 sp., notes, (27) 558.
stironotus n.sp., description, (28) 162.
- Pteronix ribesii*, see *Currant worm*, imported.
- Pteroptrichoides perkinsi* n.sp., notes, (29) 253.
- Pteroptrix australis* n.sp., description, (37) 460.
- Pterygogramma acuminata* n.g. and n.sp., description, (37) 855.
- Pterygophora californica*, analyses, (27) 421.
- Ptilidae*, catalogue, (26) 560.
- Ptinobius texanus* n.sp., description, (36) 556.
- Ptochoryctis tsugensis* n.sp., description, (27) 755.
- Ptomaine poisoning*—
 due to canned goods, (38) 208.
 relation to fowl typhoid bacillus, (32) 478.
- Ptomaines*, formation in wounds, (38) 783.
- Ptosima novemmaculata*, notes, (27) 863.
- Ptyalin*—
 as affected by neutral salts, (40) 504.
 in horse saliva, (40) 778.
- Ptychodes trilineatus*, studies, (38) 363.
- Public**—
 buildings, inspection in South Dakota, (33) 67.
 health—
 and medicine at Pan American Scientific Congress, (38) 580.
 court decisions on, (35) 860.
 handbook, (31) 387.
 laws, (31) 396.
 laws and regulations in Kansas, (32) 254.
 laws in United States, (34) 661; (36) 663.
- Public**—Continued.
 health—continued.
 regulations in towns and cities of United States, (32) 357.
 health, relation to—
 entomology, (33) 152.
 house flies, (26) 61.
 milk, (28) 276.
 rats, (27) 754.
 well and spring waters, (29) 512.
 institutions, supplies in, (32) 254.
 lands, settlement in Australia, (26) 291.
 range lands, management, (36) 791.
- Puccinia**—
amphigena, new aecial hosts, (36) 245.
angustata, internal aecidia of, (30) 350.
antirrhini, notes, (33) 249; (38) 546.
arenariae, biology, (34) 242.
asparagi, see *Asparagus rust*.
bambusarum and *P. mogiphanis* n.combs., (40) 133.
 carduaceous species, (40) 155.
chondrillae, notes, (37) 550.
- coronata**—
 infection experiments, (26) 446.
 uredospore germination, (39) 850.
 winter resistance of uredospores, (29) 645.
- coronifera**, studies, (37) 749.
- dispersa**, vitality of uredospores, (28) 346.
- dispersa**, wintering over in uredo stage, (29) 346.
- ellisia**, aecial host of, (31) 540.
- endiviae**, notes, (33) 548.
- endiviae**, studies, (31) 746.
- fusca**, aecidia, (27) 746.
- geranii**, studies, (29) 345.
- glumarum**—
 in barley seeds, (32) 642.
 Bavaria, (33) 847.
 United States, (33) 744; (36) 246.
 Utah, (36) 48.
 introduction into America, (38) 147.
 investigations, (26) 647.
 notes, (30) 649; (34) 843.
 overwintering, (39) 354.
 studies, (34) 349.
- graminis**—
avenae on timothy, (35) 847.
 biologic forms, (36) 246.
 in Denmark, (36) 247.
 in Norway, (35) 545.
 in wheat seeds, (32) 642.
 infection through wheat seed, (37) 751.
 new biologic forms, (39) 454; (40) 642.
 new strain, (37) 749.
 notes, (28) 53; (34) 242, 845; (35) 45; (39) 752.
 overwintering in Australia, (38) 48.
 relation to barberries, (30) 149.
 relation to immune host plants, (33) 245, 345.
 spore morphology, ecological factors, (40) 641.
 staining, (26) 52.
 studies, (26) 142; (38) 47; (40) 249, 641, 642, 745.
 treatment, (28) 242.
- graminis tritici**—
 compact, notes, (40) 345.
 inficiens new form, description, (39) 454.
 resistance to, (40) 344.
 wintering, (26) 143.
- interstitialis**, notes, (40) 158.
- kuehnii**, description, (31) 145.
- kuehnii**, notes, (38) 550.
- location of spore masses, (36) 825.
- malvacearum**—
 as affected by external stimuli, (31) 326.
 biology, (32) 54.
 development, (30) 453; (31) 646.
 germination of teleutospores, (34) 744.
 notes, (27) 751.
 relation to cells of host, (30) 652.
 spore formation in, (28) 745; (33) 145.
 studies, (26) 650; (31) 540.
 transmission, (33) 445.
 treatment, (26) 750; (31) 245.
- maydis**, notes, (33) 44; (37) 452.
- maydis**, studies, (29) 45.
- menthae**, notes, (37) 457.
- menthae** on Japanese peppermint, (33) 848.
- monograph, (26) 243.

Puccinia—Continued.

- n.spp., descriptions, (28) 51
 - n.spp. from the Andes, (40) 133.
 - North American species, descriptions, (31) 145.
 - obtegens, gametophytic and sporophytic generations in, (26) 844.
 - on *Carex*, North American species, (39) 147.
 - oryzae, notes, (37) 50.
 - oryzae, studies, (34) 745.
 - oxalidis, aecial stage, (40) 155.
 - peckiana and *Caeoma interstitiale*, relation, (40) 155.
 - phleipratensis—
 - infection experiments, (34) 244.
 - notes, (27) 445; (31) 344.
 - origin, (35) 848.
 - studies, (26) 52.
 - poculiformis, studies, (28) 53.
 - prostiti, notes, (33) 741.
 - pruni, life history, (37) 48.
 - pruni, notes, (33) 54; (36) 845; (39) 850.
 - pruni-persicae n.s.p., description, (28) 549.
 - pruni-spinosae—
 - description, (35) 654.
 - notes, (27) 850; (34) 352; (36) 750; (37) 550; (40) 749.
 - psidii, notes, (28) 645; (29) 243.
 - pulsatillae, specialization of, (33) 545.
 - purpurea, notes, (36) 541; (37) 452.
 - relation to *Uromyces*, (26) 645.
 - rammii, negative heliotropism of urediniospore germ tubes, (33) 330.
 - rubigo-vera, specialization, (37) 149.
 - sp. on pinks, (35) 154.
 - spp., affecting *Carex*, revision, (26) 646.
 - spp. as affected by host, (31) 540.
 - spp., cardinal temperature for germination, (27) 149.
 - spp., culture studies, (32) 145.
 - spp. in British East Africa, (37) 453.
 - spp., inoculation experiments, (28) 551; (30) 847; (31) 146.
 - spp., life histories, (30) 745.
 - spp., notes, (26) 340; (28) 443; (29) 445; (30) 240, 448, 746, 845; (33) 145, 146; (35) 47; (37) 550.
 - spp. on corn in Barbados, (33) 445.
 - spp. on *Geranium* and *Polygonum*, (36) 547.
 - spp. on *Onagraceae*, (37) 552.
 - spp., overwintering, (33) 647.
 - spp., overwintering and distribution in South America, (38) 148.
 - spp., parasitism, (38) 448.
 - spp., spore germination, (38) 224.
 - spp., studies, (36) 542.
 - spp., teleutospore formation, (34) 745.
 - spp., treatment, (27) 746.
 - spp., viability of teleutospores, (31) 540.
 - spp., wintering in Bohemia, (28) 345.
 - spongiosa, notes, (38) 848.
 - stipae, culture experiments, (36) 245.
 - suaveolens, notes, (36) 48.
 - suaveolens on California thistle, (31) 153.
 - subnitens, aecial hosts, (38) 249.
 - subnitens on sugar beets, (31) 842.
 - tanacetii, notes, (28) 747.
 - tritricina, notes, (31) 641; (34) 845; (37) 749.
 - vincae, biological observations, (39) 57.
 - vincae, notes, (28) 350.
- Pucciniaceae, monograph, (36) 647.
- Pucciniastrium—
- myrtili—
 - infection experiments, (30) 745.
 - notes, (27) 648; (31) 646.
 - pustulatum—
 - inoculation experiments, (38) 253.
 - new aecial hosts, (36) 245.
 - on *Abies lasiocarpa*, (36) 651.
 - on *Epilobium adenocaulon*, (38) 553.
 - spp., overwintering, (39) 553.
- Pudding compound, examination, (30) 664.
- Puddings, recipes, (39) 769.
- Pueraria thunbergiana, notes, (27) 528.
- Puerperal—
- diseases in cattle and their relation to meat poisoning, (34) 386.
 - eclampsia, *see* Milk fever.
 - fever streptococci, sources, (36) 577.
- Puffinus, notes, (38) 457.

Pulex—

- irritans, bionomics of, (31) 353.
 - irritans, notes, (26) 781.
 - irritans, relation to leishmaniasis, (36) 654.
 - serraticeps, relation to Leishmania, (28) 185.
- Pulleys—
- cost of raising, (34) 569.
 - early hatched, for egg production, (34) 95, 377.
 - early v. late hatched, (36) 72.
 - feeding experiments, (30) 872; (31) 472; (32) 570; (34) 376, 769.
 - late fall hatched, for egg production, (34) 178.
 - Leghorn, cost of raising, (36) 770.
 - management, (34) 694, 796.
 - ovariotomy of, (31) 572.
 - v. hens for egg production, (38) 677.
- Pulleys—
- and belts, selection, (31) 590.
 - power transmitting capacity, (29) 488.
 - tests, (28) 590.
 - transmitting capacity, (28) 187.
- Pulmonary emphysema, cause and treatment, (26) 486.
- Pulp—*see also* Paper pulp, Pulpwood, and Wood-pulp.
- analyses, (31) 663.
 - and paper industry, bibliography, (29) 119.
 - from waste resinous woods, (28) 512.
 - manufacture, soda process, (31) 715.
 - mill refuse, analyses, (33) 723.
 - mills of United States, (40) 641.
- Pulpwood—*see also* Woodpulp.
- consumption in 1917, (40) 543.
 - from jack pine and hemlock, (27) 541.
 - industry in Canada, (26) 444; (32) 144; (34) 48; (36) 45; (37) 245, 748.
 - industry in United States, (30) 845; (38) 447.
 - of Brazil, (37) 452.
 - production in Canada, (27) 443; (29) 344.
 - purchasing, (37) 452.
 - rate of replacement on cut-over land, (39) 145.
- Pulque, manufacture and use, (26) 715.
- Pulse—
- crops, fungoid and insect pests, (40) 747.
 - grains, effect on milk and butter, (34) 570.
 - insects affecting, (28) 248; (30) 53.
 - irregularities, in horses, (29) 671.
 - rate in man after muscular work, (32) 664.
- Pulses—
- breeding experiments, (37) 827.
 - relation to beriberi, (27) 461.
- Pulvinaria—
- acericola, notes, (33) 252.
 - betulae, notes, (38) 464.
 - flocifera in California, (35) 658.
 - gasteralpha, life history, (33) 555.
 - jacksoni, notes, (28) 654.
 - n.spp., descriptions and parasites, (40) 61.
 - psidii, notes, (27) 255; (31) 249; (35) 852; (40) 651.
 - vitis, *see* Maple scale, cottony.
 - vitis ribesiae, notes, (26) 452, 556.
- Pumice soils of New Zealand, notes, (27) 513.
- Pump—
- gas-driven, description, (26) 893.
 - slippage, calculations, (28) 186.
- Pumpnickel, making, (36) 159.
- Pumping—
- automobile engine for, (40) 188.
 - by electricity, (27) 86.
 - drainage, cost of, (34) 585.
 - for drainage in Louisiana, (39) 292.
 - irrigation, (29) 121, 181; (31) 587, 588; (33) 87; (37) 384.
 - irrigation, cost, (33) 688; (36) 88.
 - irrigation, treatise, (33) 884.
 - from wells, (40) 188.
- machinery—
- for drainage, (31) 784.
 - for irrigation, (32) 187.
 - notes, (30) 294, 385, 887.
 - testing, (35) 889.
- marl, tests, (39) 393.
- on irrigation projects, (40) 188.
- plant for drainage, (29) 785.
- plant for irrigation, description, (27) 385.
- plants—
- centrifugal, for irrigation and drainage, (28) 890.

Pumping—Continued.
plants—continued.

- for irrigation, (28) 83, 84, 484; (29) 784; (30) 485, 587; (36) 487, 888; (38) 186; (39) 792.
- of U. S. Reclamation Service, (38) 589.
- reservoir capacity for, (38) 389.
- small, notes, (31) 89.
- steam v. electric, (30) 289; (32) 588.
- tests and efficiency, (30) 85.

Pumpkin—

- cake, analyses, (26) 165.
- canned, examination, (30) 664.
- flies, notes, (26) 349.
- mosaic, notes, (39) 853.
- seed cake, acidity, (32) 259.
- seed cake and bran, acidity of, (35) 770.
- seeds, large v. small, (31) 634.
- seeds, oil from, (39) 9.
- seeds, sprouting, nutritive changes in, (27) 633.
- seeds, treatment, (40) 443.
- stem borer, notes, (32) 347.

Pumpkins—

- analyses, (30) 565.
- breeding experiments, (37) 827.
- calcium content, (39) 747.
- canned, keeping in open tins, (39) 317.
- composition and digestibility, (38) 571.
- culture, (27) 32.
- culture experiments, (37) 742.
- digestion coefficients, (39) 171.
- drying, (37) 509.
- fertilizer experiments, (37) 742.
- germination as affected by depth of planting, (36) 458.
- growing with corn, (40) 230.
- insects affecting, (27) 453.
- parthenogenesis in, (29) 837.
- transformation of nitrogen by, (29) 133.
- use by prehistoric Americans, (38) 167.
- varieties, (26) 233.
- water requirement, (32) 127.

Pumps—

- air lift, investigations, (27) 892.
- American Humphrey, description, (33) 488.
- centrifugal—
 - air pump for priming, (30) 588.
 - balancing devices for, (30) 288.
 - capacity, (27) 140.
 - for irrigation, (31) 588.
 - manual, (37) 585.
 - motors for, (33) 690.
 - notes, (29) 893.
 - operation, (31) 188.
 - priming, (34) 87.
 - rating chart for, (32) 485.
 - specifications, (28) 484.
 - tests, (26) 89.
 - treatise, (34) 482.
- deep-well, description, (33) 488.
- for irrigation, (28) 889; (34) 482; (37) 283, 585, 786.
- motor-driven deep-well, maintenance cost, (37) 585.
- motor-driven, design and operation, (29) 489.
- motors for, (39) 87.
- operation, (28) 893.
- reciprocating, notes, (29) 292.
- small centrifugal, tests, (33) 690.
- small v. large, (28) 186.
- two-stage turbine, tests, (29) 893.
- use in drainage, (26) 589, 789; (34) 283.

Punga bark, fiber from, (37) 535.

Purchasing associations in Posen and West Prussia, (34) 893.

Purdue University, notes, (26) 96, 494, 694; (27) 697; (28) 93, 396; (29) 698; (30) 796; (31) 197, 600; (32) 198; (33) 99; (34) 495; (35) 596, 697, 900; (37) 97, 196, 497, 700, 896; (38) 96, 198, 399, 600, 797; (39) 95, 300, 695; (40) 496, 696, 900.

Purin—

- bases, determination in urine and blood, (34) 412.
- bases in food materials, (40) 205.
- bases of muscles, behavior during fatigue, (29) 366.
- bodies, studies, (29) 63.
- compounds, decomposition in digestive canal, (33) 263.
- content of foods, (26) 355.

Purin—Continued.

- metabolism—
 - as affected by potassium salts, (28) 261.
 - biochemistry of, (31) 760; (32) 166.
 - studies, (29) 63, 365; (30) 261.

Purins, formation in soils, (32) 618.

Purple scale—

- destruction by mites, (26) 553.
- notes, (27) 455; (32) 56; (34) 60.
- on citrus fruit, (39) 161.
- on olives, (38) 157.
- remedies, (26) 534; (31) 549; (40) 455.
- studies, (26) 756.

Purpura hemorrhagica, immunization, (28) 780.

Purpura, treatment, (31) 378.

Purslane sawflies, notes, (29) 252.

Purslane, water requirement, (32) 127.

Pus accumulations, latent, biological detection, (26) 278.

Putnam's scale, notes, (28) 156.

Putorius xanthogenys, susceptibility to plague, (26) 59.

Putrefaction—

- and fermentation, studies, (26) 308.
- as affected by fluorin, (32) 308.
- bacteriology of, (28) 563.
- intestinal, (27) 465; (30) 262.
- of meat, game, and fish, (34) 163.

Puzzolan mixtures for roads, (30) 290.

Pycnobaris spp., notes, (30) 357.

Pycnoderes quadrimaculatus, notes, (26) 452; (29) 453.

Pycnometer, description, (31) 811.

Pycnoscelus surinamensis, notes, (39) 761.

Pycnosoma megacephala, notes, (29) 482.

Pyelonephritis, effect on milk, (32) 479.

Pyemia due to Bridré-Sivori bacillus, (40) 683.

Pyemia in horses, (29) 179.

Pyobacillosis—

- in pigs, (30) 484.
- of mammary gland, description, (32) 376.

Pyobacillus of sheep and goats, (27) 887.

Pyocyanae, properties of, (29) 378.

Pyocyaneus infection in dogs, (26) 280.

Pyolymphangitis, equine, causative agent, (26) 460.

Pyometritis—

- in cows, treatment, (26) 286.
- in horses, investigations, (26) 287.

Pyotherapy—

- aseptic, notes, (38) 588.
- in treatment of harness wounds, (39) 85.
- in treatment of lymphangitis, (39) 791.
- local reactions in, (39) 185, 680.
- studies, (40) 285, 883.

Pyovaccination, studies, (40) 289.

Pyracmon conocola n.sp., description, (38) 164.

Pyralid—

- moth borer, new, (33) 459.
- new, from California, (38) 766.

Pyralidae of Bermuda, (34) 63.

Pyralids, new, from British Guiana, (37) 564.

Pyralis—

- farinalis, *see* Meal moth.
- vitana, biology and control, (33) 555.

Pyrameis cardui, studies, (32) 851.

Pyramidone, periodoids of, (36) 313.

Pyrausta—

- nubilalis, *see* Corn borer, European.
- penitalis and P. nubilalis, notes, (40) 756.
- vastatrix, notes, (29) 453.

Pyraustinae, North American, notes, (37) 564.

Pyretella eriophthalma, hibernation, (34) 254.

Pyrenochaeta—

- bergevinii, notes, (30) 448.
- elodeae n.sp., description, (34) 840.

Pyrenopeziza medicaginis—

- notes, (36) 248.
- studies, (39) 354.

Pyrethrum—

- and its culture, (40) 151.
- insecticidal value, (31) 350; (39) 762.
- manganese content, (38) 207.
- studies, (40) 752.

Pyrethrums, varieties, (34) 836.

Pyrethrometers, comparison, (38) 210.

Pyridin—

- bases, detection in ethyl alcohol, (29) 312.
- derivatives, antineuritic properties, (35) 711.

- Pyridin**—Continued.
 derivatives in soils, (32) 718.
 detection in vinegar, (26) 209.
 determination, (26) 709.
 disappearance in soils, (36) 432, 725.
 effect on plant growth, (36) 212.
 effect on soil organisms, (31) 27; (38) 420.
 in soils, studies, (38) 119, 129.
 insecticidal action, (26) 758.
 relation to aroma of coffee, (31) 165.
 separation from ammonia, (26) 709.
 sterilization of soils by, (32) 816.
 vapor larvicidal value, (34) 359.
- Pyrrilla aberrans**, studies, (38) 462.
- Pyrriloxenos compactus** n.g. and n.sp., description, (32) 851.
- Pyrites**, production and use in 1911, (29) 213.
- Pyritic cinder**, fertilizing value, (29) 129.
- Pyrocatechin**—
 effect on cyanogen formation in plants, (28) 527.
 presence in plants, (38) 223.
 utilization by plants, (36) 329.
- Pyroderces**—
 rileyi—
 description, (37) 564.
 notes, (27) 657; (36) 56; (40) 453.
 studies, (35) 256.
 spp., notes, (27) 862.
- Pyrogallal acid**, effect on action of soil organic compounds, (34) 127.
- Pyrogallol**—
 effect on—
 cyanogen formation in plants, (28) 527.
 nitrification in soil, (38) 119.
 plant growth, (36) 212.
 soils, (28) 123.
 extraction with ether, (37) 414.
 relation to soil "sickness," (28) 520.
- Pyrol**, culture experiments, (31) 829.
- Pyroligneous acid**, production from wood, (28) 50.
- Pyromuric acid**, cleavage by mold enzymes, (30) 503.
- Pyronia**, description, (35) 743.
- Pyronota festiva**, notes, (28) 757.
- Pyrophorus**—
 luminosus, notes, (32) 555.
 of America, revision, (40) 655.
- Pyrophosphate**—
 assimilation by plants, (29) 624.
 Giana, fertilizing value, (26) 42.
- Pyrophosphoric acid**—
 esters of inosit, (27) 712.
 relation to toxicity of cottonseed meal, (29) 76.
- Pyropolyporus**—
 calkinsii, notes, (26) 751.
 everhartii as a wound parasite, (32) 752.
 ribis, notes, (32) 441.
- Pyroracemic acid**, decomposition by dead plants, (37) 201.
- Pyrox**—
 analyses, (26) 65.
 fungicidal value, (37) 447; (38) 235.
 insecticidal value, (34) 147.
- Pyrrhopyge** sp., notes, (30) 657.
- Pyrrhula europaea**, feeding habits, (28) 450.
- Pyrrolic acid**, effect on chlorophyll formation, (35) 435.
- Pyrus**—
 baccata, notes, (28) 436.
 malus, inflorescence and fruit of, (36) 331.
 rivularis as a stock for cultivated apples, (32) 45.
 sinensis, studies, (29) 541.
 spp., host of apple aphids, (28) 251.
 spp. inoculation experiments with brown rot fungus, (33) 247.
- Pythiacystis**—
 citricola, notes, (29) 243.
 citrophthora—
 description, (34) 353.
 growth in cultures, (38) 757.
 notes, (30) 51, 749.
 studies, (33) 55, 550.
 treatment, (35) 754.
 sp. on avocado, (37) 555.
 sp. on deciduous nursery stock, (34) 353, 646.
- Pythium**—
 debaryanum—
 description, (31) 51, 448.
 detection in potato tissue, (39) 248.
- Pythium**—Continued.
 debaryanum—continued.
 inoculation experiments, (28) 750.
 notes, (26) 548, 747; (27) 45, 544, 728; (28) 246; (29) 549, 647; (31) 55; (37) 148.
 on conifer seedlings, (40) 545.
 relation to potato leak, (35) 751.
 relation to sugar beet damping off, (33) 246.
 treatment, (27) 655; (30) 846; (31) 448, 647; (36) 547; (38) 149.
 gracile, notes, (27) 747; (28) 241.
 palmivorum—
 description and treatment, (32) 149.
 notes, (27) 353, 751; (28) 241; (34) 643; (36) 47; (38) 354.
 sp., affecting cotton, (29) 749.
- Pyxinia** n.spp., descriptions, (37) 558.
- Quack grass**—
 creeping rootstock of, (31) 37.
 description and eradication, (36) 638.
 destroyer, analyses, (30) 697.
 dissemination of fungi by, (28) 442.
 eradication, (27) 31; (28) 235, 834; (30) 738; (31) 438; (32) 530; (34) 339; (35) 35; (37) 227; (40) 734.
 identification, (29) 741.
- Quail**—
 California, notes, (27) 355.
 California valley, destruction with poisoned barley, (34) 850.
 California valley, notes, (31) 846.
 coccidiosis in, (26) 187.
 domestication, (33) 381.
 food habits, (39) 860.
 guano, analyses, (28) 523.
 propagation, (28) 752.
 valley, eating of alfalfa weevil by, (31) 655.
- Quamasia**—
 spp., notes, (35) 730.
 walpolei n.s.p., description, (35) 730.
- Quarantine**—
 laws, animal, (32) 679.
 regulations, discussion, (27) 400.
 regulations in Canada, (31) 80.
 service, federal, sanitary police work in, (27) 77, 576.
- Quassia extract**, insecticidal value, (38) 55.
- Quassini**, insecticidal value, (32) 649; (34) 355.
- Quaternary halids** in dye making, (40) 711.
- Quebec Society for the Protection of Plants from Insects and Fungus Diseases**, (32) 151.
- Quebrachia lorentzii**, notes, (27) 347.
- Quebracho**—
 red, studies, (36) 745.
 wood, uses and substitutes, (27) 347.
- Quercetin**, determination in wine, (31) 412.
- Quercus**—
 agrifolia, Christmas-berry tings affecting, (26) 148.
 emoryi, notes, (27) 647.
 garryana, notes, (27) 846.
 morehus, common name for, (36) 243.
 n.spp. of lower California, (34) 827.
 nigra, heart rot affecting, (26) 751.
 of eastern North America, (33) 646.
- Quicklime**—
 and calcium arsenate spray, (39) 311.
 effect on carbon dioxide content of soil air, (39) 516.
 effect on organic matter in soils, (35) 522.
 effect on soils, (30) 127.
 fertilizing value, (30) 839.
 treatment of wheat, (40) 337.
- Quince**—
 blight, notes, (31) 644; (34) 648.
 blotch, notes, (30) 541.
 blotch, studies, (27) 652; (33) 247.
 borer, notes, (38) 465.
 crown gall, notes, (28) 447.
 curculio, notes, (36) 856.
 diseases, notes, (33) 741; (37) 51; (38) 50.
 diseases, treatment, (33) 349; (34) 50.
 fire blight, description, (33) 447.
 fire blight, notes, (29) 348, 848.
 fruit spot, notes, (29) 547.
 Japanese, destruction, (26) 334.
 Japanese, fruit of, (34) 256.
 Japanese, petalizing, (38) 446.
 juice, fermentation, (29) 116.
 leaf blight, investigations, (33) 347.

Quince—Continued.

- leaf disease, treatment, (39) 548.
- leaf spot, description and treatment, (30) 650.
- orange rust, notes, (35) 351.
- oriental peach moth on, (39) 259.
- parasitic disease of, (33) 54.
- pear graft hybrid, description, (30) 740.
- rot, studies, (39) 756.
- rust, new, description, (31) 345.
- rust, notes, (26) 52; (32) 645.
- seeds, hydrocyanic acid content, (27) 11.
- stocks for pears, (39) 447; (40) 444.

Quinces—

- acidity, (32) 110; (37) 715.
- culture in New York, (35) 836.
- diseased, plaster cast of, (31) 748.
- drying, (37) 509.
- fibro-vascular system, (29) 542.
- insects affecting, (38) 843.
- pear thrips affecting, (27) 156.
- pruning and training, (37) 344.
- reducing and nonreducing sugars in, (29) 503.
- spray calendar, (39) 242.
- spraying, (27) 439; (37) 744.
- susceptibility to bitter pit, (31) 244.
- varieties for New Jersey, (33) 439.
- varieties in Oklahoma, (27) 241.
- Quincy Valley, Wash., irrigation project, (29) 486.

Quinin—

- determination in headache tablets, (27) 499.
- effect on production of egg yolk and albumin, (40) 664.
- effect on respiration of pea seed, (26) 729.
- hydrochlorate, effect on starch ferments, (27) 109.

hydrochlorid—

- as an antiseptic, (34) 383.
- toxicity toward plants, (34) 526.
- use in preparation of vaccine, (35) 380.
- in animal tissues and liquids, (40) 382.
- industry of Dutch East Indies, (30) 697.
- methods of analysis, (37) 113.
- use against fowl cholera, (30) 286.
- use against gaseous gangrene, (34) 383.
- use against rabies, (29) 883; (31) 480; (33) 580, 774.

Quinolin—

- as a wood preservative, (27) 314.
- bases in dye making, (40) 710.
- disappearance in soils, (36) 432, 725.
- effect on plant growth, (36) 212.
- in soils, studies, (38) 119, 129.
- insecticidal action, (26) 758.
- insecticidal and larvicidal value, (34) 359.

Quinone—

- effect on—
 - action of fertilizers, (26) 224; (27) 520.
 - plant growth, (34) 126.
 - soil microorganisms, (31) 27.
 - wheat, (28) 140; (34) 325.
- phenolate theory of indicators, (36) 711; (37) 409; (40) 202.

Quittor, Bayer's operation, (27) 576.**Ráb, substitutes for, (32) 722.****Ráb, use in preparing rice seed beds, (35) 138.****Rabbit—**

- brush, stock poisoning by, (39) 787.
- ear mange, notes, (35) 80.
- injuries to apple trees, prevention, (34) 250.
- macrophages, fixation of tetanus antitoxin by, (26) 177.
- meat, organic bases in, (26) 563.
- serum, anaphylatoxin produced in, (37) 579.
- serum, proteins of, (28) 875.
- skin clippings, fertilizing value, (29) 129.
- ticks, parasite of, (26) 863.

Rabbits—

- agouti-black color in, (29) 466.
- Angora, rearing for wool, (39) 279.
- as a pest in Alaska, (32) 54.
- as affected by killed tubercle bacilli, (28) 377.
- Bacterium tularense* in, (33) 451.
- breeding, (30) 874.
- breeding, economic significance, (26) 669.
- breeding in Germany, (32) 173.
- breeds and breeding, (38) 577.
- care and feeding, (28) 173.
- care and management, (37) 775.
- castration, (29) 168.
- color inheritance in, (38) 776.
- control, (32) 778; (38) 456; (39) 59, 153, 460.

Rabbits—Continued.

- cottontail, damage from, (34) 751.
- cross-breeding experiments, (34) 370, 466.
- dissemination of anthrax by, (28) 678.
- effect on vegetation, (37) 758.
- English, unit-character constants in, (33) 267.
- epidemic disease in, (29) 677.
- factors affecting pulse rate, (28) 768.
- growth of, (30) 467.
- host of spotted fever tick, (26) 64.
- immunity to *Bacillus suispesticus*, (26) 184.
- immunity to hog cholera bacillus, (38) 382.
- immunization against—
 - anthrax, (29) 378; (31) 82.
 - fowl cholera, (31) 485, 872.
 - hemorrhagic septicemia, (28) 881.
 - rabies, (30) 282; (32) 180.
 - tuberculosis, (26) 85; (29) 480.
- infection with avian tuberculosis, (26) 583; (30) 183.
- inheritance—
 - in, (34) 864.
 - of coat color in, (28) 768; (33) 757.
 - of size in, (32) 573.
- injection with protein-free antigen and antigen-serum mixture, (27) 382.
- male, as affected by poisons, (31) 876.
- metabolism experiments, (28) 261.
- milk, composition, (40) 775.
- morphology and function of epithelium of
 - uterine cornua, (28) 875.
- morphology of blood, (28) 777.
- normal temperature of, (28) 351.
- notes, (28) 653.
- of Laysan Island, (27) 549.
- protecting trees against, (27) 344.
- raising, (27) 374.
- relation to tapeworms in pigs, (29) 482.
- spermatogenesis, (35) 167.
- transfused, agglutinating principle in blood, (39) 584.
- transplanting of ovaries in, (28) 173.
- treatise, (31) 370, 770; (33) 174; (38) 174.
- tuberculous, cell content of blood, (28) 283.
- typhoid-like disease in, (29) 288.
- vitality as affected by lead, (32) 861.

Rabdophaga saliciperda, notes and remedies, (29) 558.**Rabies—**

- a typical case of, (26) 280.
- control, (36) 880; (37) 274, 577.
- diagnosis, (26) 679; (27) 475, 479; (28) 881; (31) 283, 580; (33) 180; (36) 80, 880.
- disease resembling, in dogs, (26) 280.
- dissemination by bats, (27) 285.
- dissemination by prairie dogs, (38) 80.
- epizootic, in Brazil, (27) 285.
- etiology, (31) 880.
- hereditary transmission, (36) 383.
- immunization, (26) 579, 582, 676, 782; (30) 281, 282; (31) 880; (32) 180; (33) 387; (37) 480, 690; (38) 580.
- infectivity of saliva during presymptomatic stage, (30) 682.
- Negri bodies in, (29) 379; (36) 179.
- notes, (28) 373; (27) 77, 884; (35) 76; (36) 79; (40) 86.
- organism, cultivation, (30) 79.
- outbreak, (39) 582.
- outbreak in sheep, (28) 586.
- papers on, (32) 271.
- paralysis in, (28) 881.
- prevalence in Germany, (28) 583.
- prevalence in Philippines, (26) 89.
- prevalence in Prussia, (27) 181.
- quiet, in bovines, (26) 485.
- relation to fly larvae, (27) 560.
- review of literature, (30) 79.
- studies, (40) 183.
- treatise, (29) 679.
- treatment, (29) 679, 883; (31) 480; (33) 580, 774; (35) 575.

virus—

- action of ether on, (39) 588.
- as affected by phenols, (26) 88.
- culture experiments, (31) 579.
- filtrate, studies, (31) 580.
- passage through ocular conjunctival mucous membrane, (39) 789.
- Race breeding, practical aspects of, (26) 299.
- Racemization, studies, (34) 71.

- Rachisia spiralis* n.g. and n.sp., description, (30) 351.
 Radiant energy, effect on plant processes, (27) 521; (30) 223, 431.
- Radiation—**
 atmospheric, (36) 19; (38) 210.
 nocturnal, meteorological conditions affecting, (30) 211.
 solar, *see* Solar radiation.
 terrestrial, studies, (36) 617.
 zones of the earth, (26) 118.
- Radioactive—**
 deposit from atmosphere, (34) 615.
 earth, fertilizing value, (33) 123.
 emanations of soils, (31) 20.
 emanations, relation to weather, (40) 314.
 fertilizer, effect on growth of oats, (35) 218.
 fertilizer, tests, (32) 519.
 minerals, effect on wheat, (27) 826.
 ores, fertilizing value, (27) 128; (34) 821, 822; (35) 628; (39) 116.
 products in the atmosphere, (30) 619.
 rays, researches with, (30) 202.
 substances as fertilizers, (32) 324.
- Radioactivity—**
 determination, (36) 414.
 determination in water, (35) 187.
 effect on—
 development of plants, (28) 529, 731.
 germination, (29) 326; (30) 131.
 plant growth, (30) 29, 224, 524, 825; (31) 129; (32) 34; (35) 523.
 soil organisms, (33) 23.
 in Minnesota soils, (33) 417.
 of soil gas, (33) 211.
 soils and water, treatise, (33) 809.
 soils of United States, (31) 418.
 spring water, (34) 332.
 progress in 1911, (27) 616; (40) 801.
 relation to metabolism in plants, (32) 329.
 relation to plant life, (28) 228.
- Radiographic examinations, preparations for, (32) 678.**
- Radiotransmission and weather, (31) 615.**
- Radish—**
 and charlock, hybridization, (36) 130.
 cabbage hybrid, description, (31) 236.
 maggot—
 notes, (29) 158.
 remedies, (30) 355.
 screening, (37) 261.
 studies, (39) 362.
 seed, large v. small, (31) 634.
 seed, viability, studies, (38) 127.
 skin extract as an indicator, (26) 108.
 weevil, notes, (32) 651.
- Radishes—**
 as affected by copper fungicides, (28) 247.
 assimilation of mineral salts by, (34) 135.
 breeding experiments, (36) 838.
 carbon nutrition of, (31) 426.
 Chinese, distribution of starch in, (34) 41.
 culture, (26) 393, 539.
 culture—
 experiments, (37) 742.
 in presence of sugar, (33) 633.
 under shade, (27) 741.
 development as affected by urea products, (26) 229.
 effect on following corn crop, (38) 135.
 elongation of hypocotyl, (28) 39, 739.
 enemies of, (29) 556.
 fertilizer experiments, (27) 629; (28) 34, 815; (30) 821; (34) 520, 532, 821; (36) 427; (37) 742.
 food value, (36) 863.
 greenhouse, carbon dioxide for, (39) 38.
 growth—
 as affected by sulphur, (32) 724.
 in partially sterilized soils, (26) 815.
 in shade, (29) 130.
 on calcareous soils, (31) 627, 816.
 historical study, (34) 532.
 insects affecting, (32) 753.
 Japanese, culture, (34) 41.
 morphology and biology, (33) 638.
 mulching v. clean culture, (33) 534.
 preservation by pressure, (32) 416.
 purin content, (40) 205.
 radioactive fertilizers for, (35) 628.
 resistance to club root, (33) 52.
 response to carbon dioxide, (40) 820.
 root disease affecting, (27) 651.
- Radishes—Continued.**
 stimulation with—
 electricity, (28) 326.
 nonessential elements, (39) 730.
 sulphur in, (31) 817.
 susceptibility to cabbage club root, (28) 547.
 utilization of atmospheric nitrogen by, (33) 627; (34) 218.
 utilization of sugar by, (36) 125.
 varieties, (35) 537; (37) 143.
 watering, continuous, (37) 643.
 winter storage, (38) 442.
- Radium—**
 as fertilizer, (32) 821; (35) 133.
 effect on blood, (40) 767.
 effect on germination of seeds, (34) 626, 730.
 effect on plants, (34) 223; (36) 526.
 emanation and weather at Manila, (33) 717.
 emanation from water, (38) 510.
 emanations—
 effect on plant growth, (31) 821.
 in soils, (27) 418.
 of the atmosphere, (31) 20, 511; (33) 211.
 fertilizing value, (33) 625; (34) 31, 331.
 forcing plants with, (29) 131.
 illumination, effect on plants, (27) 134.
 in honey, (37) 570.
 in soils of United States, (31) 418.
 in water from Gulf of Mexico, (34) 118.
 manufacture waste, fertilizing value, (30) 821.
 nature and use, (26) 580.
 rays, effect on seedlings (27) 630.
 therapy, effect on metabolism in lymphatic leukemia, (37) 267.
 treatment of leukemia, effect on metabolism, (40) 566.
 use in forcing plants, (27) 437; (28) 228, 825.
 Raffia, production, (40) 241.
- Raffinose—**
 bromination as affected by catalyzers, (40) 613.
 characteristics, (26) 116.
 determination, (26) 709; (34) 313; (40) 313.
 determination in—
 plants, (35) 206.
 presence of sucrose, (36) 806.
 raw sugars, (26) 115, 116.
 sugar beets, (30) 812.
 effect on polarization of beet molasses, (38) 113.
 isolation from beet sugar products, (26) 313.
 occurrence in jute seed, (37) 710.
 occurrence in raw sugars, (26) 115, 116.
 physiological behavior, (37) 571; (40) 171.
 preparation, (32) 711.
 relation to molasses formation, (26) 116.
- Rag refuse, analyses, (28) 523.**
- Rag waste, fertilizing value, (33) 125.**
- Ragi, culture experiments, (32) 227; (38) 135, 433.**
- Ragi millet, notes, (26) 361.**
- Ragweed—**
 analyses, (32) 169.
 eradication, (27) 733.
 galls, notes, (35) 651.
 great, analyses, (34) 39.
 leaf variation in, (27) 741.
 occurrence of barium in, (26) 432.
 pollen, composition, (37) 612; (39) 803.
 pollen, protein extract, (40) 607.
 western, water requirement, (32) 127.
- Ragwort—**
 life history and eradication, (36) 535.
 poisoning cattle in England, (38) 82.
- Rahar, culture experiments, (37) 826.**
- Railroad—**
 rates, relation to cost of living, (29) 594.
 sanitation, notes, (30) 862.
 ties—
 antiseptic treatment, (27) 542.
 durability, (27) 348.
 exploitation in New Mexico, (31) 342.
 industry in Canada, (26) 242; (28) 645; (30) 744; (32) 238.
 preservation, (26) 241, 242; (27) 148; (28) 240, 442, 645; (29) 240, 344; (32) 47; (34) 240.
 seasoned v. unseasoned, treating, (26) 644.
 use in Canada, (29) 843.
- Railroads—**
 and agriculture, relative productivity, (28) 687.
 in Spain, agricultural extension work of, (31) 400.
 relation to agriculture, (27) 591; (28) 92.

Rails, North American, distribution and migration, (32) 55.
 Raimondia, notes, (31) 339.
 Rain—
 as drinking water supply in British Guiana, (29) 16.
 chemistry, (27) 317.
 chlorin content, (30) 418, 620, 815; (32) 121.
 combined nitrogen in, (27) 212.
 composition, (31) 21, 416; (34) 15.
 dissemination of plant diseases by, (38) 47.
 dissolved oxygen in, (37) 620.
 effect on cereals, (27) 15.
 effect on composition of hay, (26) 235.
 excessive, in California, (28) 415.
 fertilizing value, (27) 317; (29) 209; (32) 419; (33) 716; (36) 19; (38) 619.
 forests, mountain, in Jamaica, (32) 748.
 gage, eight-day recording, (33) 118.
 gage exposure, effect, (34) 117.
 gage, "Seathwaite" pattern, (30) 118.
 gages, accuracy, (30) 17.
 nitric and nitrous acids in, (34) 118.
 nitrogen, chlorin, and sulphates in, (34) 615; (38) 416.
 nitrogen content, (30) 211, 815; (31) 812; (32) 120, 121, 615, 616; (33) 617; (35) 620; (38) 509; (40) 724, 809.
 notes, (28) 897.
 of South Polar region, ammonia content, (26) 515.
 papers on, (27) 816.
 penetration of soil surfaces by, (29) 426.
 problem of denudation by, (40) 118.
 relation to grape downy mildew, (28) 448.
 relation to sunspots, (27) 718.
 smoke acids in, (32) 422.
 spotting of morning-glories by, (29) 752.
 substances dissolved in, (40) 19.
 sulphuric acid content, (40) 314.
 summer, of North Germany, (27) 510.
 transition to blue sky, (31) 213.
 tropical, (35) 619; (38) 415.
 water, hardness of, (29) 122.
 water of Leeds, analyses, (27) 212.
 Rainbow, horizontal, (32) 210.
 Rainbows—
 ground, (36) 419.
 horizontal, on Lake Mendota, (35) 115.
 papers on, (37) 115, 513.
 Rainfall—*see also* Precipitation.
 after battle, (32) 614.
 and evaporation in eastern Pennsylvania, (32) 34.
 gunfire, (38) 115, 511.
 raininess, (39) 718.
 run-off in Oahu, Hawaii, (37) 513.
 run-off in Porto Rico, (32) 187.
 synoptic winds, relation, (35) 115.
 annual, of Scotland, (28) 213.
 annual, of United States, (27) 616; (28) 212; (38) 209.
 approximating over long periods, (29) 14.
 as affected by—
 cannonading, (37) 418, 512, 717.
 forestation, (31) 415.
 forests, (29) 842; (36) 346, 843.
 as factor in tree increment, (27) 348.
 at Arecibo, (29) 85.
 Berkeley, California, (29) 510, 511; (35) 116.
 Georgetown, Demerara, (35) 420.
 Mazatlan, Mexico, (28) 716.
 Montevideo, (34) 15.
 North Platte, (29) 225.
 Temple, (38) 334.
 computing run-off from, (33) 775.
 conservation, (30) 17.
 cyclonic distribution, (26) 614.
 deficient, in summer of 1913, (29) 813.
 desert, effect on soil moisture, (30) 619.
 diminution with height above the ground, (40) 314.
 discussion, (30) 17.
 distribution in France, (39) 18.
 distribution in Sicily, (31) 716.
 diurnal distribution, (36) 717.
 effect on—
 composition of tomatoes, (34) 636.
 composition of wheat, (29) 834.

Rainfall—Continued.
 effect on—continued.
 crop yields, (34) 319.
 distribution of soil particles, (32) 511.
 electric energy consumption by irrigation plants, (36) 184.
 fruit crop in Norway, (40) 810.
 growth of trees, (31) 716.
 protein content of wheat, (28) 537; (30) 836.
 redwood, (38) 522.
 rubber and resin content of guayule, (30) 744.
 tree growth, (38) 415.
 water level in soils, (35) 813.
 water level in wells, (34) 319.
 yield and quality of wheat, (30) 662.
 yield of corn, (39) 418.
 yield of milk, (28) 716.
 efficiency of varying amounts, (38) 716.
 European, as affected by American temperatures, (31) 416.
 excessive, in London, (38) 511.
 forecasting in southern England, (30) 619.
 greatest, (26) 614.
 greatest at Washington, D. C., (38) 511.
 heaviest in British Isles, (38) 511.
 heavy—
 at Kansas City, (32) 614.
 at Montell, Texas, (29) 721.
 effect on soils, (35) 514.
 in Arkansas, (29) 510.
 in Louisiana, (30) 417.
 in Alberta and Saskatchewan, (29) 85.
 Australia, (33) 616, 807; (34) 118; (40) 716.
 British Isles, (32) 25; (33) 20; (39) 210; (40) 314.
 California, (30) 713; (32) 120; (33) 716.
 Canada, (36) 617.
 China, (35) 618.
 Colorado River Delta, (28) 484.
 cotton belt of United States, (33) 20.
 eastern United States, (33) 117, 118; (38) 717.
 France, (28) 315.
 Great Britain, (32) 119; (36) 811.
 Great Britain and Ireland, (30) 118.
 Habana, (27) 15.
 Hawaii, (31) 616.
 Hungary, (27) 510.
 India, (32) 615; (37) 716.
 Indo China, (37) 620.
 Italy, (40) 810.
 Java, (37) 16.
 Massachusetts, (30) 318.
 Minnesota, (26) 418.
 New Bedford, Massachusetts, (33) 212.
 New South Wales, (35) 116; (36) 19, 811.
 New Zealand, (33) 118.
 Nile Basin, (26) 118; (28) 315; (30) 511; (33) 510.
 North and South America, (35) 419.
 northeastern United States, (32) 119.
 Paris, (28) 416.
 Philippines, (26) 318.
 Queensland, (27) 686; (33) 212.
 Rhodesia, (31) 511.
 St. Croix, (33) 807.
 St. Paul, Minnesota, (31) 21.
 Scotland, (34) 320.
 South Africa, (38) 15.
 South Africa as affected by vegetation, (39) 418.
 southwestern Alaska, (40) 809.
 Sulphur Spring Valley, (29) 725.
 Sumatra, (34) 510.
 Tennessee, (29) 616; (35) 795; (38) 318, 319.
 Texas, (33) 788.
 Tunis, (31) 287.
 Turgai-Ural Colonization District, (26) 620.
 Union of South Africa, (34) 818.
 United States, (34) 415; (35) 15; (39) 418; (40) 808.
 United States, factors determining, (33) 319.
 United States, relation to agriculture, (33) 715.
 upper Pecos Valley, New Mexico, (37) 808.
 Victoria, (28) 416; (29) 896.
 western and equatorial Africa, (34) 208, 320.
 western United States, (33) 319.
 western Washington, (33) 299.
 lunar periods in, (38) 510.
 map of United States, (33) 318.

Rainfall—Continued.

- May and June, (37) 315.
- measurement, (30) 17, 713; (40) 715.
- minimum, determination, (37) 315.
- "monsoon," (33) 118.
- observations, long-period, value, (34) 319.
- observers, instructions to, (34) 509.
- on cold days, (36) 419.
- records, use by waterworks engineers, (40) 715.
- records, value, (33) 212.
- regions of United States, (33) 318.
- relation to—
 - battles, (34) 509.
 - chestnut blight, (37) 557.
 - corn and wheat production, (38) 317.
 - corn yield, (35) 618.
 - cranberry fruit rots, (38) 454.
 - crop production, (26) 415; (28) 716.
 - crop yields, (35) 14; (38) 509.
 - forests, (38) 510.
 - grape downy mildew, (38) 755.
 - ground water, (33) 322.
 - irrigation, (28) 316.
 - lint length in cotton, (40) 827.
 - magnetic storms, (38) 15.
 - moon, (27) 817.
 - protein content of wheat, (33) 41.
 - run-off, (30) 288.
 - seepage, (27) 116.
 - spring wheat yield, (30) 418; (33) 117; (39) 210.
 - succeeding crops, (36) 209.
 - sun spots, (28) 211; (38) 115; (40) 416.
 - water level, (33) 806.
 - water supply, (34) 510.
 - wheat culture, (28) 213, 638; (36) 440.
 - wheat production in Australia, (36) 209.
- subnormal, frequency in August, (40) 118.
- summaries, value, (31) 811.
- sun spots, and magnetic storms, (38) 811.
- treatise, (31) 511.
- variation in, (26) 214.
- variation with altitude, (27) 816, 817.

Rainstorm of 1912 in British Isles, (30) 118.

Rainstorms in New York City, (30) 417.

Rainy season in southern Rhodesia, (32) 211.

Raisin—

- grapes, seedless, (39) 845.
- industry in California, (35) 343.
- industry in United States, (34) 835.
- industry in Valencia, (29) 439.
- seeds, utilization, (29) 13; (39) 615.

Raisins—

- dried—
 - analyses, (30) 861.
 - inoculation experiments with brown rot fungus, (33) 247.
 - preparation and use, (29) 462.
- drying, (37) 114.
- effect on composition of urine, (31) 761.
- for pigs, (36) 171.
- insects affecting, (34) 60.
- making, (34) 235; (35) 647.
- oil and press cake from seeds, (40) 803.
- ripening and cap-stemming, (32) 235.
- seedless, cap-stemming, (28) 742.
- stored, insects affecting, (32) 245.

Raleigh, N. C., as an agricultural and financial center, (36) 494.

Rama fiber, tests, (31) 526.

Ramie—

- culture, (37) 830.
- culture experiments, (35) 337.
- notes, (28) 335.
- varieties, (30) 434.

Ramona stachyoides—

- analyses, (26) 612.
- oil of, (33) 202.

Ramularia—

- areola, notes, (33) 741; (35) 45.
- betae, notes, (28) 649.
- brunnea, description, (26) 852.
- cynarae on artichoke, (32) 341.
- macrospora, notes, (27) 45.
- macrospora, relation to apple rot, (33) 348.
- n.spp., descriptions, (37) 748.
- paulula, notes, (26) 341.
- spp. on potatoes, (33) 849.
- studies, (30) 537.

Ramularia—Continued.

- trachystemonis n.s.p., description, (35) 454.
- violae, notes, (37) 550.

Rana pipiens—

- feeding habits, (31) 349.
- upper limit of temperature for, (35) 851.

Range—see also Grazing.

- carrying capacity tests with sheep, (39) 171.
- caterpillar, poisonous spines, (39) 561.
- caterpillar, studies, (36) 55.
- conditions in western United States, (29) 666.
- conditions on Mica Mountain, (30) 568.
- cows, maintenance on yucca and sotol, (40) 277.
- finder, description, (31) 341.
- grasses in North Dakota, (40) 299.
- lands, public, management, (36) 791.
- lands, reseeding, (37) 437.
- management in New Mexico, (33) 268.
- plants of Guam, (31) 467.
- plants of Wallowa National Forest, (37) 818.
- plants, poisonous, see Plants, poisonous.
- preservation, relation to erosion, control, (39) 439.
- stock, emergency feeds, (40) 276, 471.
- utilization, studies, (39) 773.
- white sage, destruction, (39) 172.

Rangella vitalii, parasitic in dogs, (35) 785.

Ranges—

- depleted, reseeding, (30) 35.
- elevated, vegetation, (39) 810.
- improvement, (27) 528; (29) 224; (30) 334.
- in southern Arizona, (35) 439.
- management, (32) 227, 731.
- management in Southwest, (38) 447.
- natural revegetation, (32) 227.

Ranula, notes, (40) 283.

Ranunculaceae, oils and alkaloids of, (36) 628.

Ranunculus arvensis, habits and eradication, (37) 542.

Rapakivi granite, potash from, (27) 127.

Rape—

- analyses, (28) 469; (32) 171.
- and turnips, crosses between, (31) 528.
- as cover crop, (32) 332.
- cover crop for fall planting, (39) 532.
- forage crop, (31) 829; (33) 226; (38) 827; (39) 338.
- green manure for wheat, (35) 426.
- hog pasture, (32) 136; (33) 380; (39) 372, 777, 879; (40) 771.
- breeding, (28) 835.
- bug, notes, (40) 260.
- cake, analyses, (26) 165; (27) 570, 872.
- cake, effect on milk and butter, (34) 570.
- cake, residual effects, (31) 319.
- cake, sulphureted, fertilizing value, (38) 121.
- cooperative experiments, (29) 138.
- culture, (27) 32; (28) 835; (31) 35; (32) 226, 337; (33) 238.
- culture—
 - and pasturing value, (40) 36.
 - experiments, (28) 531, 735; (31) 42; (32) 132, 528; (33) 33, 34; (37) 132; (38) 133.
 - for winter forage, (38) 735.
 - in cotton belt, (32) 533.
 - Hawaii, (32) 729.
 - Porto Rico, (29) 631.
 - Rhodesia, (27) 32, 637.
 - under dry farming, (36) 529.
- dust, analyses, (28) 523.
- dust, fertilizing value, (27) 831, 832; (35) 30; (37) 229; (39) 529.
- fertilizer experiments, (26) 129, 424, 631; (27) 32, 422; (28) 815, 816; (29) 22; (32) 435; (35) 221, 728; (36) 626; (37) 135, 533; (39) 624, 738.
- fertilizing value, (27) 831.
- for cut-over land pasture, (39) 231.
- fattening lambs, (40) 569.
- pigs, (34) 174.
- silage, (35) 768.
- germination as affected by fertilizers, (29) 327.
- growth as affected by fertilizer salts, (29) 329.
- growth on volcanic ash, (32) 36.
- insects affecting, (31) 548.
- liming experiments, (38) 22; (39) 25.
- meal, availability of nitrogen in, (35) 426.
- nibs, analyses, (27) 670.
- oil, detection, (26) 713; (29) 613; (39) 804.
- oil, physical constants, (35) 312.
- pollination experiments, (30) 528.
- relation between size of seed and yield, (26) 434.

Rape—Continued.

- root development with other crops, (26) 129.
 - root louse injury, (40) 60.
 - root system, (32) 634.
 - seed, adulteration, (35) 740.
 - seed, analyses, (33) 870.
 - seed cake—
 - acidity, (32) 259; (35) 770.
 - analyses, (30) 268, 467; (34) 263.
 - as a feeding stuff, (37) 416.
 - examination, (37) 416.
 - fertilizing value, (38) 624.
 - for grass lands, (33) 527.
 - Indian, adulteration, (26) 468.
 - seed—
 - imported, germination tests, (35) 140.
 - in Maryland markets, (32) 740.
 - meal, analyses, (30) 268; (31) 467, 864; (33) 170, 870.
 - oil, manufacture, (31) 42.
 - oil, refractive index, (27) 614.
 - production and utilization, (34) 531.
 - production in China, (31) 42.
 - vitality, (27) 740.
 - serpentine leaf miner affecting, (29) 857.
 - sulphur in, (31) 817.
 - susceptibility to swede mildew, (34) 52.
 - tops, analyses and feeding value, (34) 664.
 - tops, decomposition in soil, (40) 214.
 - varieties, (26) 631; (27) 32; (30) 525; (31) 42, 829; (37) 134, 135.
 - water requirements, (29) 826; (32) 127.
 - yield as affected by sulphur, (34) 726.
 - yields, (31) 226.
- Raphanus-Brassica hybrids, studies, (29) 320.
- Rapistrum rugosum, notes, (34) 532.
- Raspberries—
- acidity, (32) 110; (37) 715.
 - as a medicinal plant, (30) 145.
 - breeding, (31) 442; (38) 845.
 - breeding and testing in Minnesota, (40) 148.
 - breeding experiments, (28) 542; (32) 338, 835; (33) 637; (35) 144, 744; (36) 741; (37) 240; (39) 346; (40) 740, 742.
 - crossing experiments, (33) 44.
 - culture, (28) 840; (31) 441; (33) 47; (34) 42; (38) 246, 347, 643, 845; (39) 242.
 - culture experiments, (27) 343; (28) 436.
 - culture in western Nebraska, (32) 233.
 - extracted, sale, (28) 661.
 - fertilizer experiments, (33) 48; (34) 294; (36) 121; (38) 218, 540.
 - for home and commercial planting, (33) 537.
 - frost injuries, (27) 349; (29) 547.
 - fungus disease affecting, (26) 450.
 - hybridization experiments, (28) 436.
 - improvement in Minnesota, (34) 637.
 - insects affecting, (26) 246; (28) 352; (40) 158.
 - irrigation experiments, (33) 683; (36) 640.
 - new, description, (29) 838; (33) 238; (35) 37.
 - picking and packing, (33) 47.
 - preservation by freezing, (39) 344.
 - preservation by pressure, (32) 416.
 - propagation and shipping experiments, (34) 637.
 - shipping experiments, (33) 642.
 - training, (33) 47; (40) 743.
 - varieties, (28) 542; (33) 47; (35) 742; (37) 243; (38) 246, 643.
 - varieties for New York, (26) 239.
 - varieties in Oklahoma, (27) 241.
 - variety tests, (32) 141; (40) 340, 740.
- Raspberry—
- anthracnose—
 - notes, (40) 53.
 - perfect stage, (33) 350; (38) 252.
 - studies, (36) 347; (38) 853.
 - treatment, (39) 343, 457.
 - beetle, notes, (32) 448; (40) 265.
 - bluestem, studies, (28) 348.
 - bytturus, notes, (28) 158.
 - cane blight, description and treatment, (27) 250; (30) 246.
 - cane blight, notes, (28) 148; (32) 49, 441, 544; (38) 546.
 - crown gall, notes, (26) 56; (31) 644.
 - crown gall, studies, (35) 550.
 - diseases, notes, (27) 448; (28) 352, 748; (37) 52; (38) 50; (39) 652; (40) 158.
 - fruit rot, notes, (28) 544.
 - horntail, investigations, (29) 260.

Raspberry—Continued.

- juice, preparation, (33) 316; (40) 763.
 - juice, studies, (34) 256.
 - mildew, notes, (34) 749.
 - Ohta, description, (30) 640.
 - orange rust, studies, (37) 457.
 - pollen, germination, (35) 731.
 - red worm, notes, (36) 754.
 - root rot fungus, composition, (26) 750.
 - rust, notes, (36) 498.
 - rust, notes and treatment, (29) 50.
 - spur blight, (36) 396.
 - strawberry hybrid, description, (28) 742.
 - thimbleberry hybrid, (36) 442.
 - wilt, description, (34) 55.
 - wine, preparation, (27) 412.
 - yellow—
 - description and treatment, (30) 246; (31) 545.
 - immune variety, (40) 154.
 - notes, (30) 647; (32) 49, 149; (39) 353.
 - studies, (26) 646.
- Rat—
- destroying preparations, investigations, (27) 550.
 - diseases, papers on, (27) 754.
 - flea, Indian, infectiousness, (40) 161.
 - fleas—
 - bionomics of, (27) 58; (30) 757.
 - in Suffolk and North Essex, (28) 757; (29) 55.
 - length of life apart from host, (28) 255.
 - life history, (31) 552.
 - longevity, (28) 356.
 - notes, (26) 653; (29) 755; (32) 348; (33) 159.
 - relation to bubonic plague, (30) 254.
 - guard for ships' lines, description, (27) 550.
 - plague, diagnosis, (36) 753.
 - plague of East Suffolk, England, (26) 461.
 - proofing—
 - as an antipalogue measure, (27) 754.
 - public docks of New Orleans, (33) 552.
 - serum, anaphylatoxin produced in, (37) 580.
 - traps, efficiency, (30) 851.
- Rat-bite fever—
- cause, (35) 487, 783; (37) 375.
 - spirochete, (39) 588; (40) 781.
 - streptothrix in, (36) 678.
 - studies, (40) 479.
 - treatment, (35) 487; (39) 389.
- Raticide, notes, (27) 52.
- Ratin, use against voles, (30) 545.
- Rations—
- acid and basic, effect on ammonia production, (33) 368.
 - army, *see* Army rations.
 - balanced, (33) 97.
 - balanced—
 - from restricted sources, (33) 69, 367, 465; (37) 766; (39) 71.
 - from restricted sources, physiological effects, (26) 467.
 - notes, (29) 362.
 - v. unbalanced, for cows, (28) 174.
 - balancing, (28) 465; (31) 663.
 - box, for army use, (35) 165.
 - calculating, (33) 170.
 - changes in, (26) 261.
 - combining for livestock, (29) 170.
 - computing, (28) 364, 770; (31) 266; (38) 73; (39) 167.
 - concentrated v. bulky, for cows, (28) 174.
 - digestibility of components, (36) 470.
 - effect on—
 - composition of urine of dairy cows, (36) 672.
 - development of swine, (33) 375.
 - growth and dairy qualities of cows, (34) 378.
 - intestinal flora of swine, (38) 875.
 - quality and yield of wool, (32) 99.
 - emergency for U. S. Army, (35) 664.
 - emergency, notes, (32) 562.
 - for Arab soldiers, (33) 68.
 - cattle and sheep, (30) 567.
 - cattle feeding, (34) 72.
 - cows, (29) 375, 575; (37) 195.
 - cows, computing, (36) 374.
 - dairy stock, (35) 378.
 - farm animals, (30) 169; (31) 663; (36) 469.
 - poor families, (30) 167.
 - ruminants, computing, (26) 72.

Rations—Continued.

- from restricted sources, physiological effects, (28) 872.
 - from single plant sources, tests, (27) 68.
 - high protein—
 - and energy, utilization, (39) 75, 381.
 - v. medium protein, (27) 73.
 - in Philippines, (28) 764.
 - in United States Army, (32) 459, 460.
 - mineral content of, effect on growth, (29) 64.
 - mixed, digestibility, (32) 69, 70; (34) 169; (37) 677.
 - of British and Indian troops in relation to disease, (40) 564.
 - of Italian Navy, (40) 561.
 - of soldiers in the training camps, (40) 68.
 - portable, suggestions for, (31) 68.
 - starch values and fodder units, (27) 276.
 - steamed, (39) 269.
- Rats—*see also* Rodents.
- acid-fast bacillus from, (26) 653.
 - albino and Norway, treatise, (40) 546.
 - albino, growth in, (36) 267.
 - animal parasites of, (38) 760.
 - as a menace to health, (29) 852.
 - as affected by gonadectomy, (34) 263.
 - as affected by vegetable diet, (27) 271.
 - biology and control, (35) 656.
 - bionomics, (27) 550; (29) 756.
 - black or ship, of Great Britain, (35) 656.
 - breeding experiments, (27) 370; (40) 463.
 - brown, Acari on, (32) 353.
 - brown, in Manitoba, (39) 654.
 - brown, prolificacy, (26) 346.
 - color inheritance in, (38) 776.
 - control, (39) 461.
 - destruction, (27) 356, 888; (30) 153; (36) 653; (38) 356, 497.
 - destruction—
 - on ships, (29) 651; (38) 356.
 - with bacteria, (26) 579.
 - with Danyasz bacillus, (35) 52.
 - destructive to sugar cane and coconuts, (26) 857.
 - destructiveness and control, (39) 460.
 - development of ascarid larvae in, (37) 374.
 - directions for raising, (38) 258.
 - economic importance, (38) 255.
 - feeding experiments, (28) 260, 364; (30) 567; (31) 69.
 - feeding experiments with fat-free food mixtures, (28) 863.
 - fertility in relation to age, (40) 468.
 - field, relation to plague, (40) 161.
 - Gaertner group bacilli in, (30) 355.
 - growth as affected by protein intake, (33) 262.
 - growth on restricted rations, (33) 69.
 - habits of, (29) 651.
 - hybrid, sex ratio, (27) 769.
 - immunization against plague, (26) 653.
 - Indian, races of, (26) 346.
 - infection with avian tuberculosis, (26) 583.
 - injurious to cacao, (27) 53.
 - injurious to coffee trees, (33) 536.
 - inoculation experiments, (27) 555.
 - leprosy in, (29) 651.
 - leprosy-like disease in, (29) 756.
 - mammary gland, studies, (40) 467.
 - metabolism cage for, (28) 272.
 - microbes affecting, (27) 52.
 - migratory habits, (34) 548.
 - morphology of blood, (28) 777.
 - natural history, (27) 754.
 - new, from North America, (37) 757.
 - notes, (37) 156.
 - nutrition of, (36) 161.
 - nutritive requirements, (37) 264.
 - of Great Britain, (34) 57; (36) 852.
 - ovulation period, (40) 663.
 - pack, destructive to Jeffrey pine, (38) 53.
 - parasites of, (27) 754; (29) 755.
 - piebald, selection experiments, (39) 877.
 - plague-infected, of Hawaii, (26) 854.
 - relation to—
 - equine influenza, (28) 482.
 - hog cholera, (40) 480.
 - poliomyelitis, (36) 354; (40) 85, 546.
 - public health, (27) 754; (30) 153.
 - Spirochaeta icterohaemorrhagiae, (38) 653, 760.
 - rice, new species of, (34) 850.
 - rice, of North America, (39) 860.

Rats—Continued.

- serum proteins of, (28) 875.
 - small house, biology, (40) 160.
 - spiny, in Philippines, (40) 646.
 - Spirochaeta icterohaemorrhagiae in, (39) 759.
 - susceptibility to pneumonic plague, (28) 180.
 - undersized, postnatal growth, (40) 469.
 - use in study of anaphylaxis, (37) 582.
 - wharf, notes, (27) 856.
 - white, immunity against anthrax bacillus, (29) 378.
 - wood, host of spotted fever ticks, (26) 64.
- Rattan supply of Philippines, (33) 646; (35) 44.
- Rattlepod, fertilizing value, (32) 722.
- Rattleweed, description, (32) 474.
- Ravenella, n.spp.—
 - descriptions, (36) 145.
 - notes, (38) 125.
- Ravens of North America, (39) 860.
- Ravines, restoration in Russia, (27) 148.
- Ravinia n.spp., descriptions, (33) 158.
- Ray fungus disease in South American ox tongues, (31) 882.
- Razoumofskyia—
 - americana and R. occidentalis abietina, new hosts, (38) 152.
 - americana, host plants, (36) 753.
 - campylopoda inoculation experiments, (38) 253.
 - laridis injurious to larch, (34) 547.
 - spp. on conifers, (39) 57, 554.
 - studies, (40) 253.
 - tsugensis in Alaska, (34) 546.
 - tsugensis, new hosts for, (33) 551.
- Reagents and reactions, treatise, (39) 803.
- Reapers, care and repair, (39) 292.
- Recareidus sp. attacking stored potatoes, (36) 253.
- Reclamation—
 - Board Act of California, (35) 490.
 - in United States, (27) 188.
 - of marshlands, (40) 587.
 - project, Belle Fourche, (40) 391.
 - project in California, work of, (39) 497.
 - projects, (40) 391, 786.
 - projects, hints to settlers, (40) 687.
 - Service, *see* United States Geological Survey.
- Reconstruction—
 - agricultural, in Great Britain, (39) 401; (40) 91.
 - and reeducation of disabled soldiers and sailors, (40) 591.
 - in France, (39) 689, 892.
 - in Ireland, (29) 894.
 - problems, relations of agricultural colleges and experiment stations to, (39) 702.
 - rural, in Ireland, (40) 91.
- Rectal feeding, plan of, (39) 670.
- Rectal temperature in childhood, (31) 563.
- Recurrent fever, etiology, (29) 479.
- Recurvaria—
 - alnifrutella n.s.p., description, (33) 748.
 - dorsivittella, life history, (33) 655.
 - milleri n.s.p., description, (33) 655.
 - nanella, studies, (31) 252, 755; (36) 656.
 - piccaella, notes, (29) 256.
- Red—
 - bug, false, notes, (33) 252.
 - bug, lined, notes, (26) 146.
 - bug, notes, (30) 53; (34) 160.
 - bugs, remedies, (38) 257.
 - clover, *see* Clover, red.
 - dog flour, *see* Flour, red dog.
 - headed fungus, notes, (26) 358; (29) 852.
 - rice, eradication, (37) 632.
 - sanders tree, descriptive account, (38) 146.
 - scale, fumigation experiments, (39) 463.
 - scale on citrus fruit, (39) 161.
 - spider—
 - control, (39) 870.
 - dissemination by wind, (30) 759.
 - effect on potato foliage, (34) 449.
 - geographical distribution, (32) 63.
 - in Germany, (34) 658.
 - in greenhouses, (39) 65.
 - in Ohio, (34) 59.
 - injurious to alfalfa, (33) 558.
 - injurious to citrus fruits, (28) 457.
 - new species, (36) 660.
 - notes, (26) 856; (29) 360; (30) 362; (32) 56, 251; (34) 60; (35) 254, 356, 657; (37) 460, 461, 847; (38) 365.

- Red—Continued.**
 spider—continued.
 on beans, (39) 256.
 cinchona, tea, etc., (40) 656.
 citrus fruit, (39) 161.
 cotton, (35) 468; (36) 557.
 paper on, (39) 461.
 remedies, (27) 357; (28) 759; (32) 536; (38) 63; (40) 453.
 studies, (29) 261; (32) 156.
 tail, European, notes, (27) 255.
 turpentine beetle, notes, (26) 561.
 weevil in Ontario, identity, (40) 653.
 weevil, life history, (26) 654.
 wings, destruction of locusts by, (28) 351.
- Redonda phosphate**, dehydrated, fertilizing value, (28) 816.
- Redpolls**, destructive to Chinese cotton scale, (26) 556.
- Redtop**—
 analyses, (29) 270.
 as affected by companion crop of clover, (37) 438.
 as forage crop, (31) 829.
 culture—
 experiments, (29) 631; (32) 431, 529; (36) 32.
 in cotton belt, (32) 534.
 in the Ozarks, (29) 427.
 effect on following crop, (38) 337; (40) 135, 623.
 growth on volcanic ash, (32) 36.
 identity and agricultural characteristics, (39) 532.
 irrigation experiments, (32) 224.
 notes, (37) 29.
 palatability, (34) 865.
 Sclerotium disease, (31) 641; (39) 753.
 seed—
 adulteration and misbranding, (29) 144.
 analyses, (26) 739.
 germination and purity tests, (29) 741.
 seedling on ranges, (29) 531; (30) 35.
- Redutase**—
 animal and vegetable, nonspecificity, (37) 309.
 detection, (26) 204.
 in chicken fat, (28) 63.
 eggs, (28) 64.
 normal raw milk, (28) 412.
 tobacco plant, (31) 204.
 investigations, (33) 409.
 of plants, (37) 203.
 origin and use, (28) 19.
 tests in dairy inspection, (27) 781.
- Reductions in the animal body**, (28) 607.
- Reduviidae of North America**, (30) 55.
- Redwater**—*see also* Texas fever.
 English, treatment, (39) 891.
 immunization, (33) 384.
 in cattle, (28) 182; (30) 383; (33) 384; (38) 486.
 in cattle, treatment, (26) 382.
 Rhodesian, *see* African coast fever.
- Redwood**—
 destruction by *Termes lucifugus*, (26) 858.
 lands, management, (26) 51.
 long-seasoned, strength tests, (29) 442.
 mechanical properties, (27) 846.
 relation to rainfall and fog, (38) 522.
 volume table, (29) 442.
- Reeds**—
 Spanish, culture under dry farming, (30) 435.
 wild, analyses, (28) 464.
- Reflux condenser**, description, (40) 308.
- Reforestation**—*see also* Forestation.
 and occult condensation, (34) 614.
 as affected by birds and rodents, (29) 545.
 by seed trees, (32) 839.
 general principles, (28) 439.
 in Black Hills National Forest, (33) 843.
 France, (33) 541.
 Massachusetts, (27) 444; (36) 843.
 mountains of northern Idaho, (33) 242.
 National Forests, (26) 241; (32) 748; (33) 645; (37) 348.
 New Hampshire, (36) 744.
 New South Wales, (28) 51.
 New York, (35) 451.
 Pennsylvania, (37) 45; (38) 846.
 ravines, (26) 643.
 southern Argentina, (35) 452.
 Sweden, (27) 44.
 the Tropics, (26) 141.
 Wisconsin, (35) 242.
- Reforestation—Continued.**
 notes, (26) 643.
 of brush fields in northern California, (32) 748; (34) 640.
 burned areas in high mountains, (36) 144.
 chestnut land, (31) 341; (37) 451; (38) 45.
 coastal plain, (36) 646.
 hardwood areas, (30) 743.
 mountain burns in Arizona and New Mexico, (31) 839.
 pine lands, (33) 542; (37) 836.
 sand hills of Nebraska, (31) 744.
 papers on, (27) 444.
 rôle of light in, (37) 45.
- Refractometer**—
 description, (37) 110.
 differential, (39) 502.
 immersion, use in vinegar analysis, (27) 112.
 immersion, water bath for, (27) 14.
 use in sugar-house work, (28) 612.
- Refractometry**—
 principles of, (32) 309.
 uses of, (28) 409.
- Refrigerating**—
 machinery, notes, (27) 792.
 plant for dairies, description, (30) 789.
- Refrigeration**—
 domestic, notes, (31) 592.
 effect on hops, (29) 13.
 in dairying, (27) 376.
 in handling of milk, (31) 575.
 in transportation of perishable products, (40) 488.
 mechanical, handbook, (28) 385.
 notes, (34) 892.
 of dressed poultry in transit, (30) 71.
 of food products, (27) 460.
 of measly beef carcasses, (32) 880.
 physics of, (28) 563.
- Refrigerator cars**—
 brine tank, for fruit, (36) 640.
 construction, (30) 72.
- Refrigerators**—
 for farms, (38) 292.
 iceless, (39) 382.
 notes, (30) 165.
 score card for, (35) 663.
 tests, (27) 486.
 use, (29) 88.
- Rehmiella ulmicola n.sp.**, description, (34) 242.
- Reichert-Meissl number**, determination, (30) 114; (31) 811; (40) 412.
- Reindeer**—
 breeding in Alaska, (30) 672.
 cysticerci affecting, (27) 182.
 industry in Alaska, (31) 368.
 industry in Russia, (29) 772.
 milk and cheese, analyses, (30) 476.
 moss, culture experiments, (36) 369.
 sarcosporidia in, (28) 885.
- Reithrodontomys**, revision, (31) 647.
- Relapsing fever**, transmission by bedbugs, (26) 760; (36) 356.
- Relationship coefficient**, description and application, (32) 665.
- Relationships**, determination, (33) 822.
- Relationships**, symbolic statement, (28) 173.
- Remedies**, new and nonofficial, (37) 876; (40) 284.
- Remedies**, new, compilation, (31) 478.
- Remigia repanda**—
 notes, (29) 356.
 studies, (33) 560, 654.
- Renal**—
 cells, distribution of potassium in, (30) 277.
 disease, metabolism in, (35) 371.
 excretion as affected by salt, (27) 464.
- Rengera in lambs**, (38) 687, 688.
- Rennet**—
 action as affected by salts, (26) 477.
 action, chemistry of, (26) 372.
 action, inhibition, (28) 18.
 action on milk, (28) 177.
 artificial, use in cheese making, (30) 778.
 calves', immunizing against, (30) 477.
 cleavage action of, (26) 608.
 coagulation of milk by, (28) 372; (32) 503; (36) 610.
 determination of activity, (29) 504.
 for cheese making, (34) 77.

- Rennet**—Continued.
 homemade, preparation, (36) 378, 477; (37) 576, 778.
 in latexes, (31) 409, 410.
 in *Rhizopus nigricans*, (31) 34.
 preparation, (36) 571.
 preparation from calves' stomachs, (34) 574.
 reaction on milk, (27) 810.
 substitutes for, (34) 574; (37) 273; (39) 884.
 whey, factors affecting specific gravity, (26) 478.
- Rennin**—
 action on casein, (29) 805; (32) 606.
 effect on digestibility of milk protein, (36) 559.
 separation from pepsin, (26) 803.
 studies, (28) 18, 177.
- Reproduction**—
 as affected by mineral content of rations, (33) 666.
 bibliography, (26) 470; (33) 168.
 in birds, physiology, (40) 664.
 in fowls, studies, (33) 74, 96.
 in rats as affected by diet, (39) 672.
 physiology of, (33) 168, 369; (37) 371, 772.
- Reproductive**—
 cells, vitality, (27) 273.
 organs as affected by X-rays, (38) 268.
 tissues, variation in composition, (37) 774.
- Reptiles**—
 as food, (40) 555.
 blood parasites of, (33) 152.
 of North America, check-list, (39) 655.
- Rescue grass**, notes, (37) 29.
- Rescue grass**, varieties, (30) 434.
- Research**—
 agricultural, *see* Agricultural research.
 laboratory, Parke, Davis & Co., papers from, (32) 81.
 work, factors in, (32) 303.
- Reseda**—
 lutea, root system, (37) 542.
 odorata, heredity of self-sterility in, (29) 136.
- Reservoirs**—
 earth, reducing seepage, (39) 86.
 effect on climate, (27) 509.
 for small pumping plants, (38) 389.
 for the farm, (38) 84.
 small earthen storage, construction, (33) 885.
 small storage, notes, (28) 186.
 storage, linings for, (31) 384.
 treatise, (31) 511.
 unlined earth, construction, (37) 585.
- Resin**—
 clarification, (29) 719.
 effect on soils, (36) 513.
 industry in Austria, (32) 48.
 industry in Tonkin, (31) 839.
 of *Xanthorrhoea quadrangulata*, (40) 449.
 secretion in *Balsamorhiza*, (39) 224.
 yielding plants, treatise, (34) 838.
- Resinous**—
 tracheids, significance, (39) 451.
 wood, distillation, (28) 24.
 wood, waste, utilization, (28) 512.
- Resins**—*see also* Oleoresins.
 formation and flow in trees, (33) 543.
 in hops, (27) 814; (33) 507; (34) 502, 711.
 methods of analysis, (27) 205.
 of *Araucaria araucana*, (40) 615.
 of Chile, (38) 336.
 of Douglas fir, (30) 10.
 production from wood, (28) 50.
 soft, in hops, (26) 209; (33) 709.
- Resorcin**—
 effect on cyanogen formation in plants, (28) 527.
 factors affecting activity, (28) 609.
- Resorption** in the cellular organism, (31) 261.
- Respiration**—
 after death in *Laminaria*, (39) 631.
 anaerobic, in fruits and plant tissues, (29) 538.
 anaerobic, in seed plants, (29) 525.
 and carbon dioxid assimilation in plants, (28) 728.
 and catalase activity in sweet corn, (39) 524.
 and cell energy, notes, (30) 669.
 apparatus—
 description, (28) 272; (30) 767.
 for ruminants, description, (31) 71.
 for sheep and swine, (30) 170.
 for small animals, (29) 569, 869; (33) 265.
 portable, (40) 465.
- Respiration**—Continued.
 apparatus—continued.
 small, description, (26) 766.
 types of, (34) 260.
 biochemistry of, (32) 664.
 calorimeter—
 description, (28) 463, 570, 865; (39) 676.
 for large animals, (31) 764.
 for study of disease, (34) 67.
 improved, (34) 369.
 small, description, (35) 768.
 use in vegetable physiology, (27) 67, 466, 568; (28) 362.
 demonstrating heat of, (39) 223.
- experiments**—
 at Cornell University Medical College, (30) 863.
 with cattle, (32) 169.
 infants, (30) 369; (32) 257, 461.
 men, (28) 569; (34) 260.
 milch cows, (39) 676.
 newborn infants, (34) 861.
 plants, (26) 729.
 ruminants, (32) 767.
 steers, (33) 72.
 sweet potatoes, (34) 426.
- in diseased apple leaves**, (32) 751.
 fruits, (29) 135.
 fungi, (26) 628.
 man, apparatus for recording movements in, (29) 665.
 man as affected by body position, (30) 264.
 partly dried plant organs, (36) 824.
 plants, (26) 227; (27) 132, 523.
 plants as affected by—
 anesthetics, (37) 821.
 electricity, (31) 33.
 enzymes, (27) 221, 426.
 loss of water, (39) 731.
- in plants**—
 at various temperatures, (26) 822; (36) 28.
 biochemistry of, (26) 227.
 effect of organic substances on, (26) 628.
 heat of, (39) 223.
 rôle of fermentation products and phosphates in, (26) 627.
 studies, (26) 729; (27) 28, 426, 632; (28) 427, 428, 631; (29) 324; (31) 33; (34) 523, 524; (35) 821; (36) 329.
 studies, apparatus for, (39) 27.
 variation in, (26) 628.
 in tropical plants, (31) 222.
 incubator for infants, (32) 860.
 intramolecular, in plants, (27) 226.
 of plants in gases, (29) 525, 538.
 physiology of, (36) 865.
 post-mortem, of plants, (27) 731.
 relation to fermentation in plants, (28) 328.
- Respiratory**—
 activity, relation to sunlight, (34) 30.
 chamber, description, (31) 764.
 chamber for small animals, (34) 370.
 coefficient of plants, (28) 729; (31) 33.
 diseases, relation to temperature changes, (36) 64.
 exchange as affected by—
 food ingestion, (26) 565.
 one-sided diet, (31) 361.
 salts, (33) 69.
 ventilation, (33) 70.
 exchange—
 during muscular work, (33) 464.
 in animals, treatise, (36) 266.
 diet poor in nitrogen, (29) 165.
 fish, (32) 565; (33) 664.
 green plants, (31) 33.
 infants, (26) 766.
 man, (33) 756; (34) 260; (36) 266.
 organs, tissues, and isolated cells, (30) 201.
 relation to body surface area, (28) 263; (31) 562.
 ferments in plants, notes, (27) 828.
 pigments in plants, (26) 326.
 quotient as affected by one-sided diet, (31) 361.
 quotient of plants, (29) 27.
- Resplendent shield bearer**, notes, (30) 657.
- Restaurants**—
 for shop girls in Copenhagen, (32) 857.

Restaurants—Continued.

- inspection, (26) 461, 868; (29) 661; (30) 665; (31) 359; (32) 162.
- inspection in—
 - Argentina, (26) 762.
 - Indiana, (34) 861.
 - Missouri, (33) 164.
 - Montana, (33) 67.
 - Nevada, (33) 661.
 - North Dakota, (28) 661; (33) 753.
 - Virginia, (29) 766; (32) 661.
 - law in Florida, (33) 165.
 - low-priced, in Christiania and Vienna, (32) 856.
 - unsterilized vessels in, (31) 259.
- Resthania atripennis* on castor bean, (40) 453.
- Retaining walls, treatise, (35) 786.
- Reticulitermes speratus* n.sp., description, (35) 255.
- Reticulation, artificial, in peaches, (27) 230.
- Retting, microbiological, notes, (38) 715.
- Reversion in cattle, (33) 668.
- Rhabditin, notes, (33) 681.
- Rhabdoblatta brunneonigra* n.sp., from China, (34) 255.
- Rhabdocnemis*—
 - obscurus, notes, (31) 553.
 - obscurus, studies, (26) 237; (39) 868.
 - sp. affecting sugar cane, (34) 556.
- Rhabdophaga*—
 - saliciperda, studies, (28) 559.
 - spp. injurious to willows, (32) 554.
- Rhabdopterus picipes*—
 - remedies, (39) 60.
 - studies, (33) 456; (36) 54.
- Rhabdospora*—
 - alexandrina n.sp., description, (32) 443.
 - bernardiana n.sp., notes, (37) 630.
 - coffea, notes, (38) 51.
 - dodartiae n.sp., description, (35) 844.
 - melongenae n.sp., description, (27) 152.
- Rhacodineura antiqua*, life history and habits, (37) 160.
- Rhaeboscels tenuis*, studies, (40) 754.
- Rhagidia* sp., notes, (29) 458.
- Rhagoletis*—
 - cerasi, notes, (27) 53.
 - cingulata, see Cherry fruit maggot.
 - fausta, notes, (30) 852.
 - fausta, remedies, (31) 757.
 - fausta, wild host, (39) 467.
 - juniperinus n.sp., description, (34) 450.
 - pomonella, see Apple maggot.
 - ribicola, see Currant fruit fly.
 - spp. on cherry, (33) 561.
 - spp., studies, (29) 65.
- Rhamnose*—
 - behavior in fermenting mixtures, (27) 502.
 - determination in presence of other methyl-pentoses, (34) 11.
 - isolation from soils, (28) 418.
- Rhamnus purshiana*, notes, (32) 46.
- Rhaphidophorinae* in America north of Mexico, (34) 854.
- Rhaphidospora coffeicola*, notes, (38) 51.
- Rheosporangium aphanidermatus* n. g. and n.sp., description, (33) 648.
- Rheumatism*—
 - acute articular, organism, (39) 789.
 - articular, immunization, (37) 782.
- Rhigopsidius tucumanus*, notes, (29) 761; (30) 459; (38) 864.
- Rhigozum trichotomum*, analyses and digestibility, (27) 871; (32) 167.
- Rhina**—
 - barbirostris*—
 - affecting coconut palms, (29) 858.
 - notes, (26) 354.
 - nigra, notes, (29) 853.
 - notes, (40) 759.
- Rhinanthus*—
 - crista-galli, eradication, (40) 833.
 - spp., notes, (30) 141.
- Rhinastus pertusus*, notes, (37) 359.
- Rhinoceros beetle*, see *Oryctes rhinoceros* and *Strategus quadrioveatus*.
- Rhinoceros arboreus*, scale-feeding habits, (38) 865.
- Rhinotrichum tenellum*, notes, (28) 648.
- Rhipicephalus*—
 - appendiculatus—
 - notes, (29) 58.
 - relation to African Coast fever, (28) 478.

Rhipicephalus—Continued.

- appendiculatus—continued.
 - relation to amakebe, (26) 882.
 - remedies, (27) 476.
- bursa—
 - notes, (29) 482.
 - relation to anaplasmosis, (28) 284.
 - relation to equine piroplasmosis, (31) 382.
- sanguineus—
 - in Key West, (30) 555.
 - notes, (27) 865.
 - parasite of, (26) 863.
 - transmission of *Trypanosoma cruzi* by, (31) 159.
- simus, notes, (34) 851.
- simus, relation to anaplasmosis, (26) 585; (29) 584.
- spp., notes, (27) 361; (28) 83.
- Rhipiphoridae*, catalogue, (30) 458.
- Rhipiphorothrips pulchellus* n.g. and n.sp., description, (31) 550.
- Rhipsalis cassytha*, transpiration in, (32) 522.
- Rhizina**—
 - inflata, notes, (27) 854; (39) 254.
 - inflata, studies, (33) 150.
 - undulata, sexuality in, (40) 226.
- Rhizobia*—
 - determination in soils, (26) 816; (27) 620; (29) 424.
 - spp., notes, (28) 814.
- Rhizobium*—
 - beyerinckii injurious to soy beans, (38) 451.
 - leguminosarum, gum of, (27) 134.
 - leguminosarum, studies, (39) 722.
 - radicicola, action of products elaborated by, (29) 222.
- Rhizobius*—
 - lopanthae—
 - destructive to purple scale, (26) 757.
 - notes, (26) 149.
 - parasitic on orange scale, (26) 554.
 - ventralis, parasitic on black scale, (26) 556.
- Rhizoctonia**—
 - as a needle fungus, (39) 554.
 - crocorum, notes, (35) 846; (36) 647.
 - destruens, notes, (36) 449; (38) 848.
 - destruens, treatment, (36) 348.
 - diseases, notes, (39) 146; (40) 48.
 - diseases, studies, (40) 746.
 - investigations, (34) 840.
 - lesions on potato stems, (33) 548.
 - medicaginis, notes, (33) 846; (38) 648.
- microsclerotia*—
 - n.sp., description, (38) 252.
 - n.sp., notes, (37) 652.
 - on fig, (39) 757.
- morphology and parasitism, (28) 149; (35) 148.
- napi, relation to *Botrytis cinerea*, (36) 449.
- on jute as affected by potash deficiency, (40) 48, 347.
- on potatoes, (32) 136; (39) 456, 649.
- parasitic in America, (35) 749.
- pathogenic action, (38) 250.
- relation to pine seedling damping-off, (33) 551.
- root rot of peas, (39) 354.

solani—

- and *Moniliopsis aderholdii*, identity, (36) 145.
- in soils, (39) 249.
- new strain on potato, (37) 654.
- notes, (32) 239, 443.
- on beans, (39) 52.
- on vegetables, (39) 454.
- rejection of name, (34) 443.
- studies, (28) 149; (32) 147; (36) 847; (37) 47, 350.
- sp., description and treatment, (30) 50.
- sp. in seed beds, (37) 651.
- sp., notes, (26) 844; (28) 246; (29) 547, 549, 647, 650; (30) 152.
- sp. on beans, (36) 248.
- sp. on eggplant, (31) 344.
- sp. on sweet potatoes, (36) 451.
- sp., relation to damping off of truck crops, (35) 844.
- sp., relation to sugar beet damping off, (33) 246.
- sp., treatment, (27) 655; (30) 846.
- spp. in America, (33) 350.
- spp. in India, (34) 50.
- spp., notes, (28) 241; (29) 445; (30) 47, 48, 538, 845; (34) 350.

Rhizoctonia—Continued.

strains of, (37) 753.

violacea—

- asparagi, treatment, (38) 648.
- description and treatment, (28) 847.
- notes, (26) 446; (28) 52; (29) 50, 243, 550; (30) 649; (32) 642; (35) 846; (38) 849.
- studies, (39) 53.
- treatment, (26) 648.

Rhizococcus falcifer, notes, (26) 655; (28) 550.**Rhizoglyphus—**

- echinopus as orchid pest, (29) 659.
- echinopus, notes, (30) 449.
- hyacinthi, notes, (35) 54.
- sp., notes, (27) 457.

Rhizomes, hemicellulose in, (30) 130.**Rhizopertha—**

- dominica, notes, (30) 655; (40) 458.
- dominica, studies, (37) 356.
- pusilla, notes, (26) 453.

Rhizopidium pollinis on oospores of *Peronosporaceae*, (31) 641.**Rhizophora—***mucronata* as a source of tannin extracts, (28) 146.

physiological studies, (39) 122.

Rhizopods in soils, (35) 121.**Rhizopogon luteolus**, prevalence in South Africa, (29) 461.**Rhizopus—**

- detection in fruit tissue, (39) 248.
- maydis n.s.p., description, (38) 849.
- n.spp., studies, (28) 745.

nigricans—

- affecting tomatoes, (30) 349, 351.
- ammonifying power, (32) 29.
- chemotropic reactions in, (36) 845.
- description, (32) 51.
- growth and sporulation, (28) 524.
- isolation from cheese, (26) 479.
- notes, (26) 647; (27) 763; (31) 447, 645.
- occurrence in sugar, (26) 505.
- on citrus, (35) 748.
- crated strawberries, (36) 452; (37) 351.
- dead or dormant sugar beets, (33) 246.
- strawberries, (38) 252, 646.
- tomatoes, (34) 53.
- protein synthesis by, (27) 525.
- relation to potato leak, (35) 751.
- relation to temperature, (33) 545.
- rennet in, (31) 34.
- studies, (26) 749; (34) 156; (39) 854; (40) 347.
- treatment, (38) 149.
- sp. on crated strawberries, (35) 458.
- spp., ammonia production by, (36) 221.
- spp. on sweet potatoes, (32) 343.
- spp., physiological studies, (34) 539.

Rhizosphaera kalkhoffi n.n. on spruce, (32) 150.**Rhizostibella rubra** n.g. and n.s.p., description, (33) 647.**Rhode Island—**

College, notes, (26) 300, 900; (27) 199; (29) 399; (30) 699; (31) 697; (37) 99; (39) 600.

Reds, see Fowls.

Station—

- financial statement, (26) 795.
- list of publications, (26) 795.
- notes, (26) 300, 900; (27) 199, 494, 600; (28) 94, 196, 600; (29) 399, 700; (30) 699; (31) 100, 697; (32) 398; (34) 296, 900; (37) 300; (38) 400, 900; (39) 400; (40) 298.
- publications, (37) 96.
- report, (30) 598; (33) 398; (35) 299; (38) 398; (40) 198.
- report of director, (26) 795.

Rhodes grass—

- analyses, (30) 565.
- culture, (34) 694.
- culture—
- experiments, (28) 735; (30) 434, 632.
- in Philippines, (26) 361; (30) 233.
- Porto Rico, (29) 631.
- Texas, (40) 730.
- under irrigation, (33) 228.

for hay and pasture, (37) 644.

hay, digestibility and productive value, (37) 865.

hay, mineral constituents, digestibility, (40) 769.

Rhodes grass—Continued.

notes, (27) 528; (29) 428.

root system, (36) 438.

Rhodnius prolixus, transmission of trypanosomes by, (30) 853.**Rhodochlorogen**, isolation from air potatoes, (28) 505.**Rhodochytrium—**

- sp., notes, (30) 647.
- splanthidis, development and cytology, (26) 852.

Rhododendron—

- borer, notes, (30) 357.
- lace bug, see *Leptobyrssa* spp.
- tingid, notes, (36) 656.

Rhododendrons—

- handbook, (26) 337.
- new, at Kew Gardens, (32) 339.
- new species, (40) 541.
- treatise, (38) 542.

Rhodoseptoria ussuriensis n.g. and n.s.p., description, (30) 240.**Rhodosticta onobrychidis** n.s.p., description, (35) 454.**Rhodoxanthin**, mitochondrial origin, (37) 129.*Rhodymenia palmata*, analyses, (37) 814.**Rhogadinae** of Philippines, (39) 468, 663.**Rhogas—see also Rogas.**

- autographae, notes, (28) 253.
- canadensis, notes, (29) 256.
- kitcheneri, notes, (36) 759.
- spp., descriptions, (32) 156.
- terminalis, notes, (36) 60.

Rhopalocera, American, mimicry in, (28) 655.**Rhopalomyia—**

- grossulariae n.s.p., notes, (26) 150.
- hypogaea—see also *Diathronomyia hypogaea*.
- notes, (34) 251.

Rhopalosiphum—see also Aphis.

- betae n.s.p., notes, (29) 454.
- brittenii n.s.p., description, (27) 758.
- brittenii, notes, (30) 53.
- hippohaes and *Myzus braggii*, confusion, (34) 357.
- lactucae, notes, (27) 758.
- nymphaeae affecting plums, (34) 550.
- nymphaeae, notes, (28) 854; (37) 461, 562.
- persicae, relation to spinach blight, (39) 551.
- spp., notes, (26) 149.

Rhopalosma poeyi, life history, (31) 355.**Rhopalothrips bicolor** n.g. and n.s.p., description, (27) 454.**Rhopalomyia grossulariae**, notes, (28) 62.**Rhopobota vacciniana**, see *Eudemis vacciniana*.**Rhubarb—**

- composition, (34) 255.
- culture, (33) 44; (34) 41; (36) 498.
- culture, treatise, (34) 232.
- curculio, biology, (29) 56.
- diseases, studies, (40) 450.
- fertilizer experiments, (26) 31; (28) 325; (34) 294; (36) 121.
- forcing experiments, (31) 835.
- handling and shipping, (34) 637.
- potato stem borer on, (39) 160.

Rhus—

- diversiloba, poisonous principle, (36) 501.
- flavones of, (39) 431.
- glabra, notes, (30) 145.
- laurina and *R. diversiloba*, fats from, (38) 202; (39) 27.
- semialata, insect galls on, (38) 764.
- spp., analyses and digestibility, (27) 871; (32) 167.
- toxicodendron, constituents of, (36) 502.
- vernix pollen, toxicity, (31) 280.

Rhusa grass oil, distillation, (27) 210.**Rhusiopathia suum**, studies, (27) 384.**Rhynchacnus (Orchestes) mangiferae** n.s.p., description, (35) 365.**Rhynchiodesia flavotessellata** n.s.p., description, (35) 259.**Rhynchbites—**

- auratus—
- egg-eating parasite of, (31) 159.
- life history, (34) 361.
- studies, (31) 254.

bicolor, notes, (32) 651.

conicus, studies, (39) 363.

pauillus, notes, (27) 453.

Rhynchites—Continued.
 rubber, investigations, (28) 455.
 rubber, nematode parasite of, (32) 453.
 spp. in Russia, (34) 857.

Rhynchophora—
 ferruginea in Ceylon, (38) 62.
 of British India, (37) 765.
 of northeastern America, treatise, (36) 157.
 of Philippines, (28) 561.
 studies, (37) 58; (40) 861.

Rhynchophorus—
 ferrugineus—
 life history, (26) 654.
 notes, (27) 858; (29) 653; (30) 660; (33) 154.
 larvae secretions in cocoon making, (34) 362.
 palmarum—
 affecting coconut palms, (29) 858.
 notes, (26) 354.
 studies, (39) 468.

Rhynchosia—
 gibba, analyses and digestibility, (27) 871.
 spp., analyses and digestibility, (32) 167.

Rhyssa, studies, (34) 758.

Rhytisma—
 acerinum, host relations, (27) 853.
 acerinum, studies, (28) 851.
 punctatum, notes, (34) 843.
 spp., studies, (28) 852.

Ribbon cane, silage from, (39) 272.

Ribe County Western Agricultural Society, (30) 134.

Ribes—*see also* Currants, Gooseberries, etc.
 aphid, dark green, notes, (30) 53.
 as winter host of white pine blister rust, (31) 647.
 pallidum, fertility of, (31) 225.
 spp., resistance to pine blister rust, (38) 151.

Rice—
 adulteration, (27) 867.
 amino acid in, (33) 665.
 analyses, (27) 140; (31) 65, 863, 864; (34) 560; (37) 363; (38) 67.
 anatomical studies, (26) 332.
 and rice cookery, (31) 394.
 anthocyan pigment in, inheritance, (38) 29.
 antineuritic vitamins in, (38) 581.
 artificial cross-pollination, (34) 823.
 as a food, (26) 865; (29) 865; (36) 464.
 affected by acids and alkalis and their salts, (34) 31.
 affected by aluminum salts, (35) 817.
 an adulterant of flour, (26) 710.
 host of curlew bug, (27) 162.
 prepared for food in Bengal, (35) 859.
 ash analyses, (29) 861.
 Asiatic, analyses, (28) 360; (29) 865.
 Asiatic, relation to beriberi, (28) 360.
 assimilation of—
 iron by, (32) 427; (36) 431.
 nitrogen by, (26) 41.
 nutrients by, (38) 340, 429.
 bean, description, (31) 739.
 beer ferment, Indian, analyses, (34) 711.
 blast, notes, (36) 845; (37) 838; (40) 845.
 blast, studies, (40) 156.
 blight, investigations, (27) 47, 248.
 blooming and associated phenomena in, (32) 130.
 blooming and fruit development of, (26) 435.
 borers in Java, (35) 58.
 borers, studies, (40) 167.
 bran—
 analyses, (26) 165, 362, 468, 568, 665, 768; (27) 469; (28) 265, 464, 572; (30) 565; (31) 73, 467, 863; (32) 862; (33) 568, 870; (34) 467, 566, 767; (36) 765; (38) 369; (40) 571.
 composition, (38) 67.
 composition and feeding value, (37) 363.
 digestibility, (31) 863; (37) 678.
 effect on fertilizing value of oil cakes, (26) 428.
 for pigs, (39) 478.
 nicotinic acid in, (29) 263; (31) 714.
 oryzanin in, (28) 168.
 preservation as press cake, (40) 614.
 protective rôle in rice diet, (28) 279.
 relation to polyneuritis, (28) 564.
 silica, estimation, (40) 610.
 branching, (28) 445; (30) 638.

Rice—Continued.
 breeding experiments, (26) 435; (33) 234; (37) 827; (38) 526, 635; (40) 631.
 breeding experiments, plats for, (40) 336.
 breeding, notes, (40) 523.
 broadcasting v. transplanting, (27) 638.
 brusone, notes, (28) 647.
 bug, notes, (40) 261.
 by-products—
 analyses, (28) 464.
 composition, (26) 468; (37) 363.
 feeding value, (26) 468; (27) 469; (40) 875.
 for pigs, (36) 768; (39) 174, 674.
 inosit phosphoric acids of, (39) 14.
 mineral constituents, digestibility, (40) 769.
 notes, (31) 834.
 carbon, use in sugar manufacture, (39) 113.
 caterpillar, notes, (30) 252.
 chop, analyses, (34) 467.
 classification, (29) 535; (31) 137.
 cleaning and polishing industry in United States, (30) 791.
 coating and polishing, (27) 64; (28) 459.
 coating, effect on neuritis production, (29) 865.
 composition—
 and dietetics of, (32) 252.
 as affected by fertilizers, (29) 231.
 at various stages of growth, (34) 435.
 consumption in Philippines, (36) 532.
 cooking quality as affected by polishing, (31) 163.
 copper sulphate for, (39) 235.
 correlation in, (36) 531; (37) 141.
 critical period of growing season, (39) 811.
 cultivated, origin, (33) 428; (35) 34.
 culture, (30) 638; (31) 855; (32) 226; (38) 236.
 culture—
 by machinery, (30) 437.
 dapog method, (34) 631.
 dry-land, (39) 423.
 experiments, (26) 233; (27) 534, 638; (28) 633; (29) 224, 830; (30) 228, 434, 525, 730, 828; (31) 733, 738; (32) 136, 227, 730; (34) 231; (35) 31, 337; (36) 331, 532, 823, 824, 825; (38) 230, 336, 337, 433, 526, 527, 635, 735; (39) 229, 230, 437, 529, 632, 738; (40) 228, 231, 332, 336, 523, 625, 825.
 in Argentina, (37) 823, 830.
 Belgian Congo, (28) 835.
 Brazil, (31) 834.
 Burma, (31) 529; (34) 227; (40) 632.
 California, (27) 140; (33) 834.
 Central Provinces, (31) 137.
 Ceylon, (31) 632.
 China, (36) 532.
 Dutch East Indies, (30) 697.
 Guam, (37) 729; (40) 328.
 Guiana, (31) 391.
 India, (28) 736; (32) 131; (35) 138.
 Indo-China, (40) 241.
 Italy, (31) 834.
 Java, (26) 332; (28) 637.
 Kongo, (29) 336.
 Madagascar, (29) 635.
 New South Wales, (37) 442.
 Oregon, (32) 827.
 Philippines, (28) 535; (36) 531, 532; (37) 538.
 Sacramento Valley, (27) 738.
 Spain, (32) 41; (35) 230.
 Uruguay, (31) 42.
 Vercelli, (34) 435.
 machine plowing in, (33) 190.
 minimum temperature limits in, (35) 718.
 Ráb system, (27) 641.
 "dead grains" of, (32) 335.
 detection in wheat flour, (28) 411.
 diet—
 effect on gastric digestion, (28) 760.
 effect on pigeons, (37) 571.
 relation to beriberi, (27) 461.
 relation to polyneuritis, (27) 568.
 vitamin supplement, (39) 667.
 dietary deficiencies, nature of, (34) 367.
 disease, notes, (29) 548.
 diseases—
 and pests, notes, (37) 247.
 in Brazil, (32) 238.
 in India, (33) 846; (36) 448.

Rice—Continued.

- diseases—continued.
 - notes, (31) 641; (34) 49, 744.
 - studies, (30) 244, 540, 845.
- distance experiments, (30) 731.
- distribution of nitrogen in, (36) 269.
- downy mildew, notes, (35) 49.
- drainage experiments, (27) 641.
- drying in storage, (30) 736.
- dry-land, production, (40) 529.
- dry-land, variety tests, (40) 823.
- effect on intestinal flora, (40) 867.
- examination, (28) 357.
- examination and food value, (30) 665.
- false smut, notes (29) 445.
- fat, hemolytic action of, (26) 156.
- feed meal—
 - acidity, (32) 259.
 - analyses, (26) 165; (33) 870.
 - effect on milk production, (26) 273.
 - methods of analysis, (29) 311.
- feeds, analyses, (29) 467.
- fermented, liquor from, (29) 118.
- fertilizer experiments, (26) 42, 232, 233; (27) 135, 336, 337, 435, 534, 637, 638, 641; (29) 228, 830; (30) 34, 229, 339, 420, 622, 730, 736; (31) 133, 733, 736; (32) 41, 136, 217, 721; (33) 32, 227; (35) 31, 32, 337; (36) 332, 532; (37) 338, 529, 539, 729, 823, 824, 825; (38) 337, 424, 433, 527, 635, 735; (39) 230, 427, 529, 537, 738, 817; (40) 228, 231, 336, 523, 625, 626, 825.
- field fly, notes, (38) 363.
- flies as a factor in control of malaria, (37) 565.
- flour—
 - analyses, (26) 768, 873.
 - availability of nitrogen in, (26) 124; (27) 723.
 - medicinal value, (29) 865.
 - recipes, (39) 871.
 - use in bread making, (33) 260.
- food value, (30) 557.
- for growing chicks, (38) 677.
- germ, composition, (26) 502.
- germinability in relation to temperature and humidity, (37) 736.
- germination energy of, (29) 538.
- germination studies, (29) 740; (30) 437; (31) 529; (38) 24.
- gluten meal, analyses and feeding value, (32) 266.
- grading, (34) 560.
- grains, disintegration by caustic potash, (31) 834.
- grains, weight of, (36) 531.
- grasshopper, control, (28) 249.
- grasshopper, studies (27) 55.
- green-manuring experiments, (36) 232; (38) 220, 336; (40) 336.
- ground—
 - analyses, (31) 65.
 - digestibility and productive value, (37) 865.
 - purified, analyses, (29) 666.
 - rough, analyses, (26) 468.
- growth as affected by alkali salts, (30) 630, 728, 833.
- growth on calcareous soils, (31) 627, 816.
- hay and straw, mineral constituents, digestibility, (40) 769.
- hay, digestibility and productive value, (37) 865.
- head-to-the-row test, (32) 230.
- host plant of corn billbug, (26) 862.
- hull carbon, use in sugarhouse work, (37) 806.
- hull content, calculating, (37) 363.
- hulled, volume weight and grain characteristics, (37) 643.
- huller and polisher, tests, (27) 234.
- hulling waste product as a feeding stuff, (35) 271.
- hulls—
 - analyses, (34) 467.
 - burnt, fertilizing value, (30) 731.
 - composition and feeding value, (38) 67.
 - composition and use, (27) 727.
 - determination in feeding stuffs, (29) 810.
 - feeding value, (39) 272.
 - for chicks, (37) 768.
 - ground, analyses, (26) 468; (38) 369.
- husking in variety tests, (39) 236.
- hybridization, (26) 733; (38) 236, 526, 635.
- hybrids, transmission of characters in, (26) 435.
- Ilocano and Tagalog, selection, (40) 336.
- imports into United States, (34) 435.

Rice—Continued.

- improvement, (26) 438; (28) 736; (33) 234.
- industry in Cochín China, (28) 535.
- industry, statistics, (26) 468.
- inflorescence of, (34) 531.
- inheritance of characters, (40) 631.
- inheritance of flowering time in, (35) 329.
- inhibitor in, (40) 632.
- insects affecting, (30) 753; (33) 856; (34) 652; (37) 847; (38) 257, 460; (39) 862.
- irrigation, (27) 140, 638; (33) 337; (34) 282; (37) 483, 883.
- irrigation in southern states, (28) 888.
- judging and study in high schools, (33) 39.
- kernel protein, hydrolysis products of, (33) 867.
- konda, analyses, (27) 469.
- leaf disease, notes, (36) 247.
- leafhopper, studies, (39) 862.
- liming experiments, (39) 537; (40) 229.
- loss in weight after harvesting, (38) 635.
- malting capacity, (40) 808.
- manuring, (28) 637.
- meal—
 - acidity, (35) 770.
 - analyses, (26) 267, 363, 568; (27) 570; (28) 265; (29) 367; (30) 67; (31) 73, 366, 467; (32) 465, 862; (33) 170; (34) 263; (38) 572, 666.
 - effect on milk and butter, (34) 570.
 - effect on pigs, (33) 775; (36) 69, 83, 180.
 - for pigs, (33) 761.
- milled, standards, (39) 871.
- milling, (34) 559; (37) 363.
- milling—
 - and by-products, (38) 67, 477.
 - industry in United States, (31) 66.
 - processes, (26) 468.
 - products, analyses, (31) 163.
- moth, notes, (34) 754.
- nematodes affecting, (31) 145.
- new varieties, descriptions, (37) 831.
- new varieties from Japan, (31) 529, 632.
- notes, (26) 362.
- nutritive value and preparation, (31) 855.
- of Bihar and Orissa, chemical study, (36) 463.
- of Lower Burma, (35) 230.
- of Siam, composition, (30) 834.
- oil and fat, chemistry of, (33) 506.
- oil, studies, (30) 665.
- on Yuma project, notes, (40) 434.
- organic phosphoric acid, (32) 712.
- phosphorus and nitrogen content, (26) 865.
- phosphorus content, (27) 461.
- pink, heredity in, (40) 632.
- plats for breeding, (40) 336.
- polish—
 - analyses, (26) 468, 568, 665, 768; (27) 469; (28) 464, 572; (30) 565; (31) 73, 366, 863; (32) 862; (33) 870; (34) 263, 467; (36) 65, 765; (38) 369; (40) 571.
 - analyses and feeding value, (38) 477.
 - ash analyses, (29) 861.
 - composition and feeding value, (37) 363.
 - digestibility, (31) 863; (37) 678.
 - oil from, (39) 109.
- polished—
 - and vitamin as a complete food, (32) 67.
 - composition, (29) 565.
 - effect on the brain, (27) 365.
 - nutritive value, (36) 158.
 - use in Philippines, (28) 760; (33) 261.
- polishings—
 - chemistry of, (33) 564.
 - extract, use against beriberi, (34) 367.
 - phosphotungstate precipitate, (33) 167.
 - use as porridge, (31) 258.
 - vitamin-fraction from, (29) 664.
 - vitamins in, (30) 285.
- pollination, (36) 527.
- pollination—
 - and cross-fertilization in, (29) 522; (32) 330.
 - studies, (33) 234.
- popped, production in China, (40) 557.
- preparation, (27) 66.
- preparations, effect on quality of dough, (26) 761.
- production—
 - and uses, (27) 739; (39) 838.
 - in the Americas, (38) 34.

Rice—Continued.

- production—continued.
 - in United States, (26) 293; (27) 739.
 - 1918 program, (38) 836.
- products, analyses, (32) 169, 568.
- proteins, (27) 166.
- proteins, nutritive value, (39) 665, 666.
- proteins, reagent for, (29) 881.
- puffed, analyses, (30) 68.
- rate of seeding tests, (27) 637, 638.
- red, control, (39) 529.
- red, eradication, (37) 532.
- region, meteorological service, (39) 718.
- relation to beriberi, (26) 155; (28) 168, 569; (29) 269, 460; (31) 463, 555, 858.
- relation to polyneuritis, (28) 567.
- root rot, studies, (29) 447.
- rotation experiments, (33) 32.
- salt as fertilizer for, (32) 324.
- salt water, tests, (30) 233.
- sampling and grading, (39) 871.
- sclerotal diseases, (40) 48.
- screenings, analyses, (27) 774.
- seed—
 - coats, thickness, (39) 826.
 - germination tests, (27) 534.
 - light v. heavy, (26) 435.
 - selection, (30) 233, 338, 437; (37) 538, 539, 824.
 - selection tests, (40) 523.
- seeding and transplanting, (36) 532.
- seeding experiments, (29) 830; (30) 525; (37) 532, 824.
- seedlings, transplanting, (38) 527.
- selection experiments, (38) 526, 527; (40) 336, 523, 623.
- smut, description and bibliography, (35) 247.
- smut, notes, (29) 245; (35) 243.
- soil aeration, (38) 828.
- soils of Hawaii, studies, (30) 420.
- soils, swamp, gases of, (39) 517.
- spacing experiments, (36) 532.
- spelts or hulls, determination in rice feed meal, (26) 714.
- spike disease, notes, (38) 848.
- starch—
 - content, (35) 108.
 - determination, (26) 709.
 - fractional liquefaction, (32) 633.
 - hydrolysis by diastase, (28) 407; (30) 111.
 - notes, (27) 765.
 - studies, (31) 828.
- stem borer, studies, (35) 659.
- stored, insects affecting, (30) 655.
- straight head disease, (35) 350; (39) 529.
- straw—
 - as mulch for sugar cane, (40) 633.
 - chloroform extract of, (31) 71.
 - composition, (27) 668.
 - digestibility, (27) 669; (34) 72; (37) 168.
 - feeding value, (38) 168.
 - fertilizing value, (30) 731.
- sulphur and chlorine content, (29) 231.
- tipulids and tabanids affecting, (33) 555.
- transplanted, morphology and development, (37) 643.
- transplanting, (31) 834; (32) 230; (33) 234; (37) 538, 824, 825; (40) 529.
- transplanting, Italian method, (34) 36.
- treatise, (31) 834.
- ufra disease—
 - notes, (29) 445; (39) 146.
 - studies, (28) 151; (30) 49; (38) 351, 547; (40) 48.
 - treatment, (36) 348, 349.
- unhusked, relation to beriberi, (32) 67, 579.
- upland, culture, (37) 539.
- use by diabetics, (28) 861.
- in bread making, (34) 460; (40) 360, 657.
- in diet, (27) 664.
- in various countries, (29) 865.
- varieties, (27) 135, 137, 140, 534, 637, 638, 641, 738; (28) 533, 736; (29) 228, 830; (30) 229, 233, 435, 525, 730, 736; (31) 42, 133, 733, 736; (32) 136, 226, 630, 729; (33) 130; (34) 36; (35) 31; (36) 737; (37) 532, 729, 824, 825, 826; (38) 229, 230, 336, 337, 433.
- varieties—
 - adapted to deep water, (38) 741.
 - differentiating, (32) 633.
 - in India, (26) 536.
 - Madras, (40) 523.

Rice—Continued.

- varieties—continued.
 - in Philippines, (36) 531.
 - Yamethin district, Burma, (29) 736.
- variety tests, (39) 230; (40) 228, 242, 332, 336, 523, 625, 823, 825.
- waste, composition and use, (27) 727.
- water culture experiments, (30) 832.
- water requirement, (32) 127.
- water weevil—
 - habits and remedies, (29) 259.
 - investigations, (27) 562.
 - remedies, (33) 257; (37) 568.
- weather injuries in Italy, (37) 50.
- weevil—
 - as affected by Roentgen rays, (28) 57.
 - egg laying habits, (31) 655.
 - in stored cereals, (39) 463, 862.
 - life history and remedies, (28) 455; (31) 354.
 - notes, (26) 453; (27) 657; (28) 158; (29) 458; (30) 655; (31) 57; (34) 754.
 - on stored corn, (40) 861.
 - remedies, (27) 258.
 - studies, (37) 356; (40) 752.
- wild, cultivation by Indians, (38) 34.
- wild, ergot of, (34) 444.
- wild, in tropical Africa, (26) 438.
- wilt disease, notes, (28) 647.
- withering of panicle in, (33) 850.
- worm, notes, (34) 250.
- xenia in, (32) 230; (40) 632.
- yellow grains in, cause, (33) 548.
- yield as affected by deep plowing, (35) 527.
- yields, determination, (37) 634.
- Richardsonia (scabra) glabra, culture, (30) 335.
- Richweed, toxicity, (38) 685, 883.
- Ricin—
 - agglutinating properties, (31) 773.
 - and its antitoxins, (32) 78.
 - chemical and biological properties, (31) 774.
 - chemical nature and preparation, (30) 204.
 - detection in feeding stuffs, (34) 467.
 - detection in feeds, (30) 204.
 - notes, (26) 676.
- Ricinus—*see also* Castor beans.
 - communis for sheep, (26) 368.
 - diseases, notes, (29) 243.
 - poisoning, studies, (34) 466.
- Rickets—
 - prophylactic therapy, (39) 772.
 - relation to diet, (26) 264; (29) 464; (39) 568.
 - review of investigations, (36) 363.
 - studies, (39) 568, 589.
 - summary and digest of data, (36) 161.
- Rickia n.spp., descriptions, (27) 460.
- Rictularia splendida n.sp., description, (32) 185.
- Riley—
 - n.sp., description, (36) 557.
 - synopsis of species, (40) 760.
- Rinderpest—
 - antiserum—
 - immune bodies in, (28) 881.
 - preparation, (28) 881.
 - production, (31) 283.
 - atypical, in carabao, (31) 677; (36) 181.
 - blood, virulence in water leeches, (33) 876.
 - chemotherapy, (32) 82.
 - control in island of Panay, (29) 582.
 - control in Philippines, (28) 782.
 - feeding and immunity in, (26) 374.
 - immune bodies, destruction by heat, (32) 476.
 - immune bodies, precipitation, (28) 881.
 - immunization, (26) 377, 578, 676; (31) 283; (32) 580; (35) 487, 784; (37) 480; (38) 484, 888; (39) 81.
 - immunization, use of organ extracts in, (39) 684.
 - in cattle and carabaos, symptoms, (28) 781.
 - Philippine cattle, (39) 684.
 - swine, (37) 79; (38) 80.
 - swine, immunization, (38) 287.
 - notes, (30) 79.
- outbreak in Davao, (26) 286.
- peculiar bodies in erythrocytes in, (30) 181.
- prevalence in—
 - east Asia, (26) 377.
 - Formosa, (27) 378.
 - Philippines, (26) 377; (27) 380.
- relation to coccidiosis in cattle and carabaos, (35) 76.
- review of literature, (30) 683; (31) 177.
- studies, (36) 779.
- transmission experiments, (31) 677; (35) 487.

Rinderpest—Continued.

- treatment, (28) 82; (35) 784; (39) 489.
- virus, cultivation in vitro, (31) 677.
- virus, culture experiments, (33) 180.
- virus, vitality outside the animal body, (38) 785.

Ringworm—

- in horses, studies, (28) 184; (38) 83.
- treatment, (35) 279.

Rio Grande—

- bird reservation, (38) 555.
- flood, (26) 614.
- waters of, (38) 386.

Ripersia—

- resinophila n.sp., description, (35) 358.
- theae n.sp., notes, (34) 652.

Riptortus spp. affecting tea, (34) 652.

River—

- and harbor improvements in Ohio, (35) 83.
- bank experimental road, (29) 85.
- bed materials, evaporation from, (37) 785.
- control in Colorado River Delta, (28) 484.
- discharge—
 - correction for changing stage, (33) 777.
 - determination, (32) 382.
 - handbook, (29) 487; (33) 287; (37) 484.
 - measurements under ice conditions, (29) 813.
- engineering, treatise, (32) 481.
- gage stations in United States, (34) 84.
- measurement, *see* Stream flow measurement.
- mud, analyses, (30) 223; (32) 424; (36) 27.
- observers, instructions to, (34) 509.
- regulation, treatise, (34) 885.
- stages, daily, (38) 590; (40) 209.
- valleys, air drainage in, (27) 413.

Rivers—

- African, desiccation, (38) 15.
- gaging, (31) 383.
- in California, notes, (29) 415, 510, 812; (30) 713.
- of Sacramento and San Joaquin watersheds, (26) 27, 214, 614.
- transportation of mud by, (27) 511.
- water level in, (33) 322.

Rizoberlesia trifolii, notes, (31) 848.

Roaches—

- common house, as carriers of disease, (30) 156.
- remedies, (27) 55; (32) 650.
- tropical, notes, (28) 351.

Road—

- aggregates, broken stone, (39) 494
- binders, asphalt, specifications, (30) 290.
- bonds, (34) 190.
- bonds, court decisions concerning, (29) 183.
- building rock, tests, (34) 684, 890; (35) 685; (39) 493.
- building, use of explosives in, (26) 91.
- concrete, hydrated lime in, (40) 788.
- departments, organization, (33) 782.
- dragging contest in Saskatchewan, (37) 695.
- drags and their use, (31) 486.
- drags, construction and use, (34) 684.
- engineering, hand level for, (33) 393, 688.
- engineering in Louisiana, (31) 684.
- grading, use of traction engines in, (26) 685.
- gravels in Iowa, (38) 692.
- improvement, rôle of traffic census in, (28) 684.
- law in—
 - Arizona, (27) 890.
 - Connecticut, (26) 891.
 - Kansas, (31) 289.
 - Missouri, (31) 590.
 - New Jersey, (26) 891.
 - New York, (37) 590.
 - Ohio, (27) 790; (35) 493, 583.
- laws in—
 - Alabama, (36) 386.
 - Iowa, (28) 382; (31) 289; (35) 493; (37) 386.
 - Kentucky, (36) 187.
 - Maine, (37) 289.
 - Minnesota, (32) 385; (38) 789.
 - Oklahoma, (36) 285.
 - Ontario, (32) 885.
 - Oregon, (35) 789.
 - United States, (26) 89; (34) 390; (36) 384.
 - Washington, (31) 385.
 - West Virginia, (34) 684.
- machinery—
 - cost of operation, (34) 484.
 - description, (26) 635; (28) 486.

Road—Continued.

- machinery—continued.
 - notes, (33) 189, 688.
 - specifications, (33) 289.
- making, treatise, (26) 789.
- materials—
 - bituminous, methods of examination, (34) 318.
 - bituminous, toughness, (37) 885.
 - in Alabama, (26) 891.
 - Canada, (36) 586.
 - Coshocton Co., Ohio, (27) 688.
 - Europe, testing, (27) 688.
 - Florida, (29) 387.
 - Minnesota, (34) 485.
 - Missouri, (27) 688.
 - New York, (33) 782.
 - North Carolina, (33) 688, 780.
 - Ohio, (32) 485.
 - Oklahoma, (27) 291.
 - Wisconsin, (34) 86.
- nonhomogeneous, specific gravity, (36) 683.
- physical properties, (35) 84.
- resources of Minnesota, (26) 385.
- specifications, (27) 386; (38) 87, 289; (39) 591, 793.
- tests, (27) 587; (35) 390; (37) 386, 695; (38) 87.
- models, (33) 393.
- models of Office of Public Roads, (28) 890.
- oil inspectors, charts for, (38) 492.
- oil, tests, (29) 687.
- pavements, tests, (29) 182.
- regulations in Ontario, (37) 489.
- river bank experimental, (29) 85.
- rollers in Netherlands, (30) 290.
- rolling, disadvantages of, (30) 888.
- sections, standard, (38) 189.
- standards in Iowa, (31) 890.
- surfacing blocks, tests, (30) 689.
- surfacing sand-clay mixtures for, (31) 289.
- surveying in Queensland, (34) 890.
- sweepings, analyses, (32) 219.
- system, county, designing, (35) 492.
- system, county, engineering cost, (37) 386.
- systems of foreign countries and of the several States, (29) 890.
- tar fumes, effect on vegetation, (35) 734.
- tars, naphthalene in, (26) 188.
- tars, pitches, etc., specifications and definitions, (35) 888.
- terms, glossary, (31) 90.
- transportation, application of power to, (31) 90.

Roadrunner, food habits, (37) 156.

Roads—*see also* Pavements.

Abney hand level for, (33) 688.

administration, (33) 290.

administration—

- in Arizona, (36) 386.
- California, (35) 82.
- Colorado, (27) 291.
- Georgia, (27) 687.
- Idaho, (28) 890; (35) 789.
- Illinois, (38) 289.
- Iowa, (34) 683; (36) 587.
- Kansas, (33) 695; (34) 788.
- Kentucky, (35) 492.
- Maine, (33) 889; (36) 587.
- Maryland, (35) 492, 686; (37) 787.
- Massachusetts, (34) 587.
- Michigan, (33) 486.
- Minnesota, (26) 385; (27) 190; (33) 588; (37) 590.
- Nebraska, (33) 888.
- New Jersey, (34) 484.
- New Mexico, (36) 284; (38) 689.
- New York, (33) 398; (35) 288; (36) 489.
- North Carolina, (33) 780.
- North Dakota, (33) 683; (37) 84.
- Nova Scotia, (35) 789.
- Oklahoma, (37) 385.
- Ontario, (33) 289; (34) 890; (37) 385; (38) 789.
- Oregon, (34) 684; (35) 389.
- Pennsylvania, (34) 587.
- Rhode Island, (35) 288.
- Texas, (30) 591.
- United States, (26) 890.
- Utah, (27) 291; (36) 284.
- Victoria, (35) 493; (36) 889.
- Virginia, (35) 188.
- Washington, (35) 686; (36) 889.

Roads—Continued.

- administration—continued.
 - in West Virginia, (36) 284.
 - Wisconsin, (37) 590, 695.
 - Wyoming, (29) 84.
 - papers on, (34) 390.
- advantages to rural life, (27) 587.
- and pavements, textbook, (28) 84.
- Arbor Day, (29) 695.
- as affected by calcium chlorid, (30) 486.
- as affected by traffic, (28) 684.
- bibliography, (28) 486.
- binding experiments, (27) 587, 789.
- bitumen bound broken stone, construction, (30) 888.
- bituminous—
 - macadam, construction, (36) 384.
 - macadam, construction field books for, (35) 389.
 - macadam, in Rhode Island, (32) 884.
 - materials for, (27) 291.
 - paper on, (26) 890.
 - surface treatments, (33) 782.
- brick, (35) 686.
- brick—
 - and concrete, maintenance, (34) 484.
 - construction, (30) 86.
 - in Middle West, (40) 888.
 - monolithic, construction, (34) 586.
 - specifications, (30) 87.
 - surfaced, in King County, Washington, (33) 781.
 - surfacing for, (28) 890.
- construction, (27) 292; (29) 86; (30) 888; (34) 890; (36) 90, 187.
- construction and maintenance, (26) 385; (27) 189, 190, 386, 484, 587, 688; (33) 889; (34) 287; (35) 84, 686; (37) 89; (38) 289; (40) 90, 188, 387, 485, 788, 889.
- construction and maintenance—
 - in Nebraska, (29) 289.
 - North Carolina, (28) 485; (29) 687.
 - Ohio, (32) 485.
 - Oregon, (28) 485.
 - papers on, (29) 291.
- construction—
 - and repair, (31) 385, 685.
 - bonds for, (38) 592.
 - chart for, (35) 789.
 - economic factors in, (32) 686.
 - economics of, (33) 688.
 - Federal aid for, (37) 89, 188; (35) 686.
 - financing, (33) 782.
 - gravel for, (37) 288.
 - in Colorado, (27) 789.
 - Florida, (29) 387.
 - Hawaii, (32) 788; (37) 384.
 - Michigan, Wayne Co., (37) 385.
 - mountain country, (32) 884.
 - National Forests, (37) 547.
 - New Jersey, (33) 686.
 - New Mexico, (26) 892.
 - Ontario, (36) 889.
 - Scotland, (31) 90.
 - swamps, (33) 189.
 - the Ozarks, (37) 695.
 - United States, Federal aid, (39) 493.
 - Wisconsin, (38) 87.
- treatise, (26) 285, 393; (28) 382; (37) 590; (38) 592.
- with convict labor, (27) 484, 588; (36) 386; (38) 789.
- cost keeping (39) 794.
- cost of construction, (29) 387.
- cost of construction and maintenance, (29) 890.
- county, economic survey, (36) 187.
- curve tables, (38) 289.
- demonstration, at Texas College, (36) 386.
- design and construction, (29) 182; (31) 590.
- distribution of traffic on, (36) 188.
- drainage, (33) 688, 782; (39) 687.
- drainage and subgrades for, (35) 390.
- drainage methods and foundations, (40) 291.
- dust prevention, (30) 884; (38) 87.
- earth—
 - and sand-clay, construction, (34) 684.
 - construction and maintenance, (36) 787.
 - sand-clay, and gravel, (36) 786.
 - treatise, (32) 85.
- economy of various types, (34) 484.

Roads—Continued.

- effect of grade and surface on tractive force, (28) 383.
- estimates for in hilly country, (30) 588.
- experimental, (30) 386.
- experimental, in Ohio, (28) 786.
- financing, (28) 186.
- forest, construction, (31) 185.
- grading and improvement, information for bidders, (34) 685.
- gravel and sand clay, (33) 782.
- gravel construction, (36) 386.
- heavy traffic, pavements for, (33) 290.
- improved, value, (27) 890.
- improvement, (26) 890; (36) 386.
- improvement—
 - economics of, (34) 788; (36) 386.
 - illustrated lecture, (37) 598.
 - in Alabama, (26) 891.
 - Connecticut, (26) 891.
 - Illinois, (26) 891.
 - Maine, (26) 891.
 - Maryland, (27) 588.
 - Missouri, (26) 891.
 - New Jersey, (26) 891.
 - Oklahoma, (27) 291.
 - South Carolina, (27) 190.
 - the South, (26) 789.
- in California, (29) 386.
- Indiana, (36) 587.
- Michigan, Wayne Co., (30) 290.
- Montana, (31) 185.
- New Hampshire, (26) 591.
- Ontario, (32) 688.
- southeastern Wisconsin, (32) 589.
- the National Forests, (40) 90.
- United Kingdom, (27) 484; (31) 289.
- United States, (38) 86.
- Victoria, (29) 896.
- jointless, specifications, (27) 890.
- location, (30) 486.
- macadam—
 - construction, (30) 788.
 - resurfacing, (31) 785.
 - traffic values, (33) 290.
 - transmission of pressure through, (33) 486.
- macadamized, tar spraying, (29) 687.
- maintenance, (27) 88, 688; (36) 285.
- maintenance—
 - and repair, (29) 388.
 - cost data, (33) 890.
 - in Indiana, (35) 389.
 - Massachusetts, (32) 188.
 - Minnesota, (32) 385.
 - relation to traffic, (33) 290.
 - United States, (35) 389.
 - motor trucks in, (35) 888.
- masonry and foundations for, (33) 782.
- mileage and—
 - cost in United States, (26) 591.
 - expenditures, (34) 190.
 - expenditures in 1915, (36) 90.
 - revenues, (37) 288, 289.
 - revenues in Middle Atlantic States, (35) 888.
 - revenues in New England States, (36) 489.
 - revenues in Southern States, (36) 785.
- mountain, construction, (33) 782.
- mountain, shelters and maintenance, (26) 130.
- nation-wide system of, (35) 746.
- oiling, (36) 787; (37) 490.
- papers on, (35) 583.
- paving, (38) 789.
- preservation, (28) 383; (38) 790.
- preservation experiments, (29) 590; (31) 686; (33) 686; (36) 188.
- primer, (30) 795.
- primer for children, (27) 492.
- prison labor for, (34) 684.
- probable duration of, (31) 591.
- public, (39) 292, 493, 687.
- public, design of, (39) 493.
- public, of South Carolina, (28) 485.
- puzzolan mixtures for, (30) 290.
- reconstructing in Southern States, (34) 484.
- refined tars for, (34) 684.
- regulations in Ontario, (36) 889.
- relation to—
 - rural life, (37) 89.
 - tire width and weight of load, (33) 782.

Roads—Continued.

- rural post, Federal aid to, (35) 200.
 - sand-clay—
 - and topsoil, for North Carolina, (33) 688.
 - construction and maintenance, (31) 890.
 - sand, hay, and tar mats for, (39) 87.
 - specifications, (29) 487.
 - standard cross sections for, (31) 890.
 - state administration and control, (40) 688.
 - state management, (33) 290; (34) 788.
 - state, of New York, (27) 386.
 - subcrust movement in, prevention, (31) 785.
 - superelevation of curves, (29) 487; (34) 86.
 - surface oiling of, (35) 288.
 - surfacing, (28) 186.
 - survey and plans for, (33) 782.
 - surveying, (36) 889.
 - surveying and mapping, (33) 688.
 - tarred, effect on vegetation, (26) 432; (27) 30, 333, 635; (28) 38, 129; (31) 827.
 - tarred, in France, (27) 190.
 - tarring, (30) 588.
 - textbook, (35) 583.
 - tire widths for, (35) 789.
 - traction resistances, (36) 388, 490; (38) 491.
 - traffic census data, (37) 188.
 - traffic factors, (33) 289.
 - treatise, (27) 687; (31) 90, 685; (33) 393.
 - vitrified brick pavements for, (33) 686.
 - wagon tire width for, (36) 787.
 - yearbook, (28) 486; (29) 388; (35) 583; (37) 590.
- Roadside planting in relation to landscape gardening, (39) 449.
- Roaring—
- etiology, (29) 500.
 - in horses, (31) 585.
 - in horses, treatment, (26) 185; (29) 83; (34) 576.
 - treatment, (27) 188, 576.
- Robin—
- agglutinating properties, (31) 774.
 - notes, (26) 676.
 - occurrence in locust seeds, (30) 204.
 - toxicity, (31) 774.
- Robinia pseudacacia—
- as affected by tarring roads, (26) 432.
 - as coffee substitute, (40) 508, 658.
 - poisoning of horses by, (30) 785.
 - poisonous constituent of bark (31) 774.
- Robins—
- coccidiosis in, (26) 187.
 - economic importance, (31) 349.
 - feeding habits, (32) 648; (38) 457.
- Roborin, feeding value, (29) 467.
- Rochelle salts, toxicity, (28) 661.
- Rock—
- asphalts of Oklahoma, (29) 591.
 - fertilizers, ground, tests, (30) 327.
 - for road building, *see* Road materials.
 - gardens, treatise, (31) 743.
 - phosphate, *see* Phosphate.
 - potash fertilizer, tests, (32) 518.
 - road-building, tests, (34) 684, 890.
- Rockefeller Institute for Medical Research—
- papers, (31) 277.
 - studies from, (33) 279.
- Rockeries, making and planting, (39) 245.
- Rockfoils, treatise, (34) 45.
- Roofs—
- aluminum silicate, of Madagascar and West Africa, (32) 511.
 - availability of plant food in, (31) 621.
 - cementing material, plant food value, (27) 513.
 - crystalline, soils from, (27) 415.
 - for road building, (35) 84, 685; (37) 386.
 - grinding, (27) 500.
 - ground, fertilizing value, (27) 500; (28) 33.
 - microscopic method of analysis, (35) 84.
 - of United States, analyses, (34) 222.
 - potash-bearing, in Wyoming, (26) 623.
 - relation to plant food constituents of resultant soils, (28) 622.
 - silicate, potash salts from, (31) 321.
 - solubility of chemical constituents, (28) 812.
 - weathering, (29) 123.
- Rockweed, analyses, (32) 32.
- Rodent—
- disease, transmissible to man, (33) 450; (34) 355.
 - pests of the farm, (39) 460.
 - plague, relation to human infection, (34) 355.
- Rodents—*see also* Rats, Mice, etc.
- control in Colorado, (34) 651.
 - destruction, (27) 52, 754; (37) 558.

Rodents—Continued.

- destruction on ships, (38) 356.
 - destruction with hydrocyanic acid gas, (35) 53.
 - destructive, notes, (29) 793.
 - effect on reforestation, (29) 545.
 - genus *Aplodontia*, revision, (39) 759.
 - in California, (40) 56.
 - injurious in Canada, (33) 552.
 - injurious to stored products, (39) 161.
 - lengths of intestines, (30) 545.
 - notes, (28) 450; (34) 528.
 - of Colorado, (39) 555.
 - of Iowa, (40) 546.
 - parasitic acari on, (33) 159.
 - plague affecting, in Suffolk and Essex, (26) 461.
 - plague-like disease affecting, (26) 461.
 - prevalence in Colorado, (30) 249.
 - relation to bubonic plague, (27) 754.
 - relation to poliomyelitis, (36) 354.
 - remedies, (31) 846, 848.
 - supergeneric groups, (40) 54.
- Roemeria hybrida*, analyses, (33) 466.
- Röntgen rays—
- effect on—
 - bacterial diseases, (38) 481.
 - blood, (40) 767.
 - chickens, (31) 369.
 - cigarette beetle, (29) 359; (35) 554; (40) 758.
 - fermentation, (27) 231.
 - formation of antibodies, (35) 679.
 - fungi, (38) 855.
 - germination and growth of plants, (35) 436.
 - germination of seeds, (28) 128.
 - growth of young animals, (31) 664.
 - insects, (28) 57.
 - Lepidoptera, (27) 656.
 - metabolism in lymphatic leukemia, (37) 267.
 - microorganisms and ferments, (27) 225.
 - ovaries, (32) 466.
 - plant and animal tissues, (30) 729.
 - seeds of *Vicia faba*, (34) 334.
 - testes of rats, (26) 354.
 - thymus and reproductive organs, (38) 268.
 - tubercle bacilli, (40) 887.
 - vegetation, (33) 31.
 - use against tumors, (29) 476.
- Roeselia antiqua*, parasitic on gipsy moth, (31) 652.
- Roeselia—
- hypogaea, notes, (26) 750.
 - pallida, notes, (36) 851.
- Roestelia—
- aurantiaca, notes, (29) 547.
 - cancellata, studies, (37) 250.
- Rogas—*see also* Rhogas.
- laphygmae n.s.p., description, (30) 60.
 - n.s.p., descriptions, (38) 165.
- Rollers, cement, construction, (29) 688.
- Rollinia—
- classification, (36) 433.
 - notes, (31) 339.
- Rolliniopsis n.g. and n.spp. from Brazil, (36) 220.
- Romaukankalk in animal metabolism, (26) 469.
- Roof paints, tests, (35) 189.
- Roofing—
- materials for rural structures, (36) 590.
 - metallic, as affected by smoke, (33) 428.
- Roofs, masonry, (36) 399.
- Roobloem, life history, (26) 440.
- Roof, feeding habits, (36) 354.
- Roosevelt Wild-life Forest Experiment Station, (40) 800.
- Roosting closets, notes, (26) 572.
- Root—
- aphids, nematode parasite of, (35) 658.
 - beer, alcohol content, (35) 557.
 - borers in West Indian soils, (28) 858; (29) 858; (30) 554.
 - cellar, concrete, description, (27) 893.
 - cellar, description, (33) 783.
 - cellars for prairie farms, (35) 690.
 - crop diseases in Saxony, (32) 749.
 - crop diseases, notes, (29) 242.
 - crop seeds in Denmark, (37) 742.
 - crop seeds, production in Sweden, (39) 644.
- Roots—
- accuracy of dry-matter determinations, (29) 310.
 - analyses, (26) 369.
 - as affected by soils, (29) 577.
 - boric acid for, (39) 730.
 - breeding experiments, (40) 735.

Root—Continued.

- crops—continued.
 - combined fungus attacks on, (35) 245.
 - cooking, (29) 566.
 - culture, (34) 630; (39) 834.
- crops, culture—
 - continuous, (31) 226.
 - experiments, (29) 431; (30) 632; (33) 227; (36) 228; (37) 732, 733; (38) 133, 634; (40) 228, 625.
 - for fall and winter use, (33) 34.
 - for winter forage, (38) 735.
 - in Brazil, (29) 428.
 - Dutch East Indies, (30) 697.
 - Nebraska, (40) 521.
 - Philippines, (34) 635.
 - South Australia, (34) 341; (35) 835; (38) 540; (40) 340.
 - South Dakota, (40) 32.
 - Sweden, (34) 431.
 - on moor soils, (38) 132; (40) 230, 523.
- crops—
 - dry matter content, (26) 436; (34) 865.
 - feeding to breeding animals, (26) 95.
 - feeding value, (38) 665; (40) 32.
 - fertilizer experiments, (26) 629, 725; (28) 828; (30) 229, 626.
 - field tests in Philippines, (40) 228.
 - for cows, (29) 577.
 - forage, (28) 41.
 - seed, field tests, (39) 437.
 - work horses, (33) 471.
 - insects affecting, (28) 248; (30) 53; (34) 651.
 - irrigation experiments, (28) 828.
 - liming experiments, (36) 27.
 - "May sick" disease of, (30) 399.
 - of Chile, (38) 336.
 - of Philippines, (40) 231.
 - profitableness of production, (29) 89.
 - seed production, (31) 524.
 - seeding experiments, (29) 432.
 - storage, (26) 95.
 - treatise, (37) 645.
 - varieties, (26) 424, 725; (28) 828; (29) 427; (30) 229, 435; (31) 829; (37) 228, 533, 733; (38) 31, 333, 432, 634.
 - variety tests, (39) 227, 336, 738; (40) 228, 731.
 - winter storage, (38) 442.
- development as affected by—
 - fertilizer salts, (29) 328.
 - phosphates, (33) 526.
- formation and geotropic curvature of stem, (37) 325.
- gall, cause and treatment, (27) 749.
- geotropism, relation to starch, (29) 322.
- growth—
 - as affected by carbon dioxide, (40) 820.
 - as affected by oxygen supply, (40) 30.
 - in swampy meadows, (40) 211.
 - methods for studying, (40) 629.
 - of cuttings, stimulation, (39) 826.
 - of forest trees, (35) 223.
 - periodicity in, (34) 29.
 - soil temperature factor, (40) 130, 426.
 - studies, (39) 122.
- habits of desert plants, (26) 728.
- hairs, callose in, (29) 326.
- hairs, glandular, (37) 222.
- hairs, production in water, (36) 433.
- hairs, structure, (28) 814.
- knot nematodes in Hawaiian Islands, (40) 51.
- knot, notes, (30) 746.
- knot, studies, (26) 342.
- knot, treatment, (32) 842; (34) 245; (37) 453.
- maggot—
 - injurious to crops in Louisiana, (37) 854.
 - notes, (29) 252, 454; (34) 753; (35) 396.
 - remedies, (33) 62; (36) 657.
 - studies, (37) 566, 599.
- nodules—
 - of *Ceanothus americanus*, (35) 132.
 - of *Podocarpeae*, (27) 828; (30) 523.
 - studies, (38) 731.
- parasites, notes, (31) 842.
- rot, control, (39) 852.
- rot, treatment, (26) 331.
- secretions, function of, (31) 221.
- secretions of plants, (30) 228.
- structure as affected by—
 - abnormal tension, (32) 825.
 - compression, (32) 825.

Root—continued.

- systems of—
 - agricultural plants, (31) 733; (33) 526.
 - cereal and forage crops, (39) 230.
 - desert plants, (30) 827; (39) 29.
 - Indian crops, (39) 230.
 - plants, atlas, (32) 634.
 - plants, development, (34) 727.
 - plants in relation to soil moisture, (31) 514.
 - plants, measurements, (28) 228.
- tips, permeability, (28) 126.
- tubercles—*see also* Nodule bacteria.
 - formation, (27) 25; (34) 727.
 - formation as affected by nitrogenous salts, (37) 133.
 - production as affected by nitrates, (35) 634.
 - urease in, (35) 334.
 - variations in, (36) 527.
- tumors, notes, (27) 544; (31) 841.
- Rootlets—
 - chemotropism in, (32) 128.
 - secondary, of cereals, (40) 32.
- Roots—*see also* Plant roots.
 - absorption—
 - and excretion of salts by, (26) 624.
 - of ions by, (34) 334.
 - of nutrients by, (37) 222.
 - adsorption of nitrogen by, (29) 732.
 - aeration experiments, (34) 334.
 - anatomical structure in different media, (37) 431.
 - as affected by anesthetics, (32) 626.
 - as affected by illuminating gas, (34) 243.
 - assimilation of atmospheric carbon by, (38) 329.
 - autotropic readjustment, (28) 430.
 - contractile, structure and function, (33) 724.
 - cooking, (29) 566.
 - determination of dry matter in, (26) 312; (27) 9.
 - edible, use in Surinam, (28) 761.
 - effect on soil structure, (30) 120.
 - ensiled, inoculating with lactic acid bacteria, (32) 767.
 - epidermal cells, (37) 128.
 - excretion of acids by, (39) 27.
 - factors affecting branching, (27) 223.
 - for lambs, (29) 271.
 - forest tree, growth, (37) 27.
 - geotropic sensitivity, (36) 330.
 - growth as affected by temperature, (36) 28.
 - growth, relation to oxygen, (36) 525.
 - hemicellulose in, (30) 130.
 - hydrotropism in, (34) 223.
 - injuries by disinfectants, (32) 647.
 - injury by arsenicals, (40) 449.
 - losses in cooking, (28) 460.
 - negative geotropism, (37) 325.
 - of herbaceous plants, treatise, (36) 223.
 - orientation, (36) 129.
 - orientation as affected by media, (35) 223.
 - osmotic pressure in relation to soil moisture (36) 733.
 - oxygen requirements, (38) 628.
 - physical relation to soil factors, (30) 223.
 - reaction to soil temperature, (32) 626.
 - relation to oxygen, (37) 525.
 - sampling device for, (37) 711.
 - secondary, orientation, (37) 27.
 - secretion of toxic substances by, (35) 636.
 - solvent action of, (31) 729.
 - starchy, as food, (36) 560.
 - succulent, food value, (36) 863.
 - thermotropism in, (31) 728; (32) 222.
 - toxic excretions from, (33) 31.
 - tree, adaptations to aquatic mediums, (30) 45.
 - use as condiments, (36) 863.
- Rope—
 - estimation of manila fibers in, (39) 15.
 - fastenings, tests, (33) 190.
 - knots, hitches, and splices with, (31) 590.
 - knotting and splicing, (29) 390; (35) 495.
 - manila, manufacture, (29) 86.
 - manila, transmission of power by, (31) 688.
 - transmitting power, (30) 190.
 - use on the farm, (30) 591; (38) 893.
 - uses, (32) 898.
 - work, exercises in, (32) 597.
- Rosa—
 - hugonis, description, (34) 45.
 - imperfection of pollen and mutability in, (37) 328.
 - rugosa, culture in Alaska, (29) 743.
 - rugosa, tests, (37) 143.

Rosaceae, after-ripening of, (29) 134.

Rose—

- aphid, studies, (31) 250.
- aphids, descriptions, (32) 848.
- apples, host plant of fruit fly, (26) 758.
- beetle, Fuller's, notes, (32) 556.
- beetle in Samoan Islands, (33) 158.
- beetle, Japanese, in Hawaii, (34) 59.
- black spot—
 - description and treatment, (29) 552.
 - investigations, (33) 347.
 - notes, (28) 449.
 - treatment, (34) 157.
- buds, malformation, (34) 143.
- canker, brown, studies, (40) 544.
- canker, studies, (39) 858.
- chafer—
 - notes, (26) 753; (28) 752; (34) 158; (35) 260, 646; (36) 854.
 - poisoning of chickens by, (34) 655; (35) 489.
 - poisonous character, (35) 279; (36) 281.
 - remedies, (26) 864; (30) 852; (38) 358.
 - western, notes, (33) 746.
- crown canker, studies, (38) 854.
- crown gall, notes, (29) 547.
- curculio, notes, (32) 651.
- diseases, (35) 840.
- diseases—
 - in Pernambuco, (39) 152.
 - notes, (31) 844; (38) 854.
 - studies, (37) 353; (38) 553; (40) 159, 751.
- flea-beetle, life history and habits, (36) 859.
- follage, spray injury, (40) 161.
- geranium, culture, (30) 44.
- geranium, culture in Algeria, (29) 149.
- leaf blotch, notes, (30) 537.
- leaf blotch, treatment, (27) 746; (32) 49; (36) 453.
- leaf disease, notes, (36) 348.
- leaf diseases, treatment, (34) 747.
- leaf mildew, treatment, (34) 442.
- leafhopper—
 - as a fruit pest, (32) 651.
 - as an apple pest, (39) 61.
 - in Nova Scotia, (38) 156.
 - notes, (28) 157, 854; (36) 857.
 - studies, (39) 61.
- leaves, anthocyanin formation in, (33) 523.
- midge in Ontario, (40) 653.
- midge, notes, (28) 854; (38) 155, 358.
- mildew—
 - inoculation experiments, (33) 647.
 - notes, (31) 746; (37) 453, 839; (40) 53.
 - studies, (26) 450; (33) 347, 447.
 - treatment, (34) 50, 157, 750.
- Oldium, treatment, (27) 855.
- pests and their control, (35) 499.
- powdery mildew, notes, (30) 537.
- rust, notes, (26) 52.
- scale, life history and habits, (33) 557.
- scale, notes, (26) 147; (28) 854; (29) 251.
- slug caterpillar, notes, (29) 855.
- soils, temperature and moisture studies, (32) 535.
- stock, penetration of scion, (39) 143.
- Tetonia, description, (30) 640.
- thrips, remedies, (34) 161.
- tree crown gall, notes, (34) 442.

Roselle—

- as companion crop for rubber, (32) 742.
- culture and use, (27) 40.
- description and analyses, (29) 161.
- mildew, notes, (27) 40.
- new varieties, (31) 535.
- notes, (29) 566.
- recipes, (32) 64, 560.
- seed, analyses, (31) 366.
- Tubercularia sp. on, (39) 453.

Rosellinia—

- bothrina attacking camphor, (33) 545.
- bothrina, notes, (40) 48.
- bunodes, notes, (28) 149; (32) 646; (35) 50; (37) 652.
- bunodes on hibiscus, (34) 841.
- disease of cacao, (33) 448.
- in Indiana, (36) 542.
- necatrix, notes, (40) 749.
- necatrix on apple and gooseberry, (34) 49.
- on coffee, (32) 645; (39) 849.
- pepo, notes, (37) 452.
- pepo or R. bunodes on limes, (34) 545.

Rosellinia—Continued.

- radiciperda, notes, (38) 452.
- sp., notes, (26) 245; (31) 55, 646.
- spp. in Lesser Antilles, (37) 454.
- spp., notes, (40) 53, 155.
- spp. on cacao, (34) 841.
- spp. on cacao and rubber, (37) 349.
- spp. on limes and citrus trees, (37) 452.
- spp. on tea, (37) 52; (38) 354; (40) 53.

Rosemary flowers, betains in, (27) 204.

Roses—

- American, annual, (35) 345.
- American Beauty, culture experiments, (32) 535.
- and rose gardens, treatise, (28) 841.
- annual, (37) 145; (38) 44; (39) 244.
- as affected by tarring roads, (26) 432.
- as host of red spider, (32) 157.
- black spot of, notes, (31) 746.
- breeding experiments, (39) 346.
- catalogue, (28) 841; (31) 536.
- coloring matter of, (34) 709.
- cultivated, history, (35) 450.
- culture, (34) 439; (35) 840; (36) 535; (37) 346, 836.
- culture experiments, (28) 342; (29) 235; (34) 44; (35) 240.
- culture, treatise, (26) 337; (33) 644; (35) 647.
- factors determining color in, (28) 639.
- fertilizer experiments, (26) 739; (29) 840; (34) 45, 143; (37) 449; (40) 741.
- for Maine, (35) 840.
- greenhouse, red spider on, (39) 65.
- handbook, (27) 242; (40) 342.
- hardy yellow, from China, (34) 45.
- history and botanical relationships, (36) 446.
- Hungarian perfume, oil content, (28) 439.
- individuality in, (31) 443.
- inoculation experiments with brown rot fungus (33) 247.
- isolation of fat from, (29) 459.
- liming experiments, (30) 344.
- mechanical spotting of, (31) 641.
- new, descriptions, (30) 534; (33) 337, 644.
- nomenclature, (39) 833.
- of Denmark, (35) 745.
- overhead irrigation in greenhouses, (26) 740.
- petalody of sepal in, (34) 143.
- rate of growth, (34) 143.
- records of flowering sequence, (39) 546.
- red, development, (29) 642.
- soils for, (34) 144.
- testing garden at—
 - Arlington Experimental Farm, (34) 345.
 - Cornell University, (34) 345.
- treatise, (26) 842; (27) 146; (28) 238; (31) 143; (32) 339; (34) 45; (36) 242.

Rosewood—

- of southern India, notes, (34) 240.

studies, (30) 347.

Roseworthy Agricultural College in South Australia, (31) 500.

Rosha grass, economic uses, (35) 807.

Rosin—

- extraction from wood, (34) 412; (36) 207.
- from Boswellia serrata, (40) 248.
- grading at the still, (27) 716.
- industry in United States, (30) 744, 791.
- oil, detection, (28) 412; (37) 13.
- oil, fluorescent test for, (26) 114.
- oil from waste resinous woods, (28) 512.
- testing and analysis, (40) 804.
- yield from double chipping, (38) 46.
- Rosins of western pines, (28) 512.
- Rosmarinus officinalis, oil of, (36) 803.
- Rosolic acid test for milk, (33) 115.
- Rostrella coffea on pimento, (39) 849.
- Rosy hispa, notes, (28) 157.

Rotation—

- experiments, (26) 43, 131, 233, 534; (27) 136, 334, 342, 430, 436, 831, 833; (28) 231, 338; (29) 31, 36, 137, 222, 227, 632, 728; (30) 124, 731, 829; (32) 321, 332, 430, 528, 630; (33) 212, 213, 214, 226, 429, 527, 728, 828, 829, 830; (34) 723; (35) 536.
- experiments—
 - in Madras, (33) 131.
 - in southwest Missouri, (33) 33.
 - in western Nebraska, (32) 223.
 - on peaty soils, (33) 227.

Rotation—Continued.

- of crops, (29) 736, 830; (30) 820, 821; (31) 226, 430, 828, 829; (32) 132, 529, 530; (34) 337; (35) 122, 438; (36) 528, 623, 734, 829; (37) 30, 33, 226, 227, 229, 230, 329, 532, 731, 826; (38) 217, 430, 431, 433, 630, 816, 825; (39) 130, 227, 334, 335, 336, 436, 530, 531, 639, 725, 737, 813, 815, 834; (40) 229, 331, 419, 430, 431, 589, 622, 623, 733, 734, 829.
 - of crops—
 - effect on protein content of wheat, (39) 742.
 - effect on soils, (28) 120.
 - for dark tobacco soils, (32) 137.
 - dry farming, (33) 632.
 - northern Wisconsin, (28) 40.
 - Tennessee, (26) 415, 423.
 - the corn belt, (27) 531.
 - tobacco wilt control, (40) 243.
 - upper Wisconsin, (35) 229.
 - in dairy farming, (40) 375.
 - dry farming, (39) 131.
 - eastern Oregon, (32) 730.
 - New Hampshire, (33) 791.
 - the East, (27) 639.
 - the South, (29) 330.
 - new basis for, (29) 516.
 - notes, (27) 734.
 - principles of, (26) 631.
 - relation to fertility, (39) 424.
 - relation to plant diseases, (26) 844.
 - relation to plant food, (27) 821.
 - sheep pasture and manurial value of feeds in, (39) 530.
 - textbook, (33) 429.
 - treatise, (29) 139.
 - under irrigation, (36) 131, 132; (39) 130.
 - use of fertilizers in, (31) 320.
 - with sugar beets, (28) 536.
 - plots, cake and corn feeding on, (40) 824.
 - systems, relation to insect injuries, (27) 554.
- Rothamsted—**
- Experimental Station—
 - report, (26) 692; (30) 599; (31) 196.
 - review of work, (29) 226.
 - experiments, treatise, (40) 514.
 - Library, notes, (40) 500.
 - memoirs on agricultural science, (32) 120.
 - Station in war time, (40) 101.
- Rotifers, sex control in, (34) 766.**
- Rottboellia spp., notes, (26) 362.**
- Roughage, utilization, (27) 899.**
- Roughage, valuation, (32) 666.**
- Roughages for fattening steers in the South, (40) 665.**
- Roundworms—**
- in poultry, (35) 385.
 - in sheep, (37) 277.
 - parasitic in pigs, (28) 285.
 - protection against digestive enzymes, (33) 478.
 - suckered, from India and Ceylon, (32) 474.
- Roup—**
- chromogenic bacillus from, (40) 483.
 - eye, contagious, (39) 791.
 - immunization, (30) 785.
 - in fowls, etiology, (38) 839, 890.
 - in fowls, studies, (35) 283.
 - notes, (32) 585; (36) 498.
 - paper on, (38) 179.
 - pathology, (26) 889; (27) 576.
 - relation to epithelioma contagiosum, (30) 884.
 - secondary invader, (34) 481.
 - vaccination, (39) 792.
- Rowen, digestion coefficients, (39) 171.**
- Rowing crews, training, (30) 465.**
- Royal—**
- Agricultural, Horticultural, and Forestry High School at Wageningen, Netherlands, (34) 898.
 - Botanic Gardens in Peradeniya, history, (34) 741.
 - Commission on—
 - Agriculture, report, (31) 490; (32) 593.
 - Industrial Training and Technical Education, (31) 596.
 - Entomological Station of Hungary, (31) 848.
 - Horticultural Exhibition in 1912, (31) 239.
 - Meteorological Society, (31) 213.
 - Veterinary College, report, (32) 271.
 - Veterinary High School at Berlin, report, (26) 373.

- Royena pallens*, analyses and digestibility, (27) 871; (32) 167.
- Rubber—**
- analyses, (29) 241.
 - and latex as affected by tapping and pollarding, (39) 848.
 - animal pests of, (35) 544; (36) 754.
 - as affected by intervals between tapping, (26) 444.
 - balata, monograph, (31) 444.
 - bark beetles affecting, (27) 458; (30) 660.
 - bark cankers, notes, (39) 152, 459.
 - bark diseases, relation to bark scraping, (35) 459.
 - belts, care and repair, (30) 89.
 - bibliography of recent literature, (39) 51.
 - black thread disease, (36) 449; (38) 351, 547; (39) 357; (40) 48, 54.
 - borer pests of, (33) 657.
 - brown bast, studies, (39) 460.
 - budding, (40) 46, 448.
 - canker, notes, (40) 448, 852.
 - canker, notes and treatment, (29) 351.
 - canker, studies, (37) 458; (38) 554, 854.
- Castilla—**
- culture and preparation, (27) 347.
 - culture experiments, (29) 642.
 - culture in Dominica, (29) 748.
 - fertilizer experiments, (27) 645.
 - tapping experiments, (27) 844; (31) 638; (34) 438; (35) 544.
- Ceara—**
- blooming habit and seed production, (28) 744.
 - culture experiments, (34) 152.
 - culture in Southern India, (35) 544.
 - tapping experiments, (29) 241.
- chemistry, monograph, (30) 313.**
- coagulants, (37) 348, 416.
 - coagulating and smoking, (26) 443.
 - coagulation, (35) 544.
 - composition and quality, (26) 745.
 - congress, international, proceedings, (27) 244.
 - culture, (26) 843.
- culture—**
- and industry, papers on, (34) 838.
 - and preparation, (38) 447.
 - and preparation, handbook, (27) 647.
 - experiments, (27) 244, 438; (29) 747; (31) 637; (32) 742; (35) 840; (37) 144; (38) 845; (40) 339.
 - handbook, (26) 50.
 - in Brazil, (33) 50.
 - British Guiana, (29) 644.
 - Dominica, (34) 438.
 - Dutch East Indies, (30) 697.
 - Federated Malay States, (27) 647.
 - German Colonies, (35) 544.
 - Guiana, (31) 391.
 - India, (28) 736.
 - Middle Kongo, (33) 646.
 - Nyasaland, (26) 829.
 - Philippines, (38) 349.
 - Singapore, (33) 646.
 - Trinidad and Tobago, (29) 644; (38) 349.
 - treatise, (29) 644.
 - use of dynamite in, (34) 47; (35) 582.
- depolymerisation and conversion, (29) 149.**
- determination, (29) 408.**
- determination in latex, (31) 444; (38) 508, 544.**
- die-back in Sumatra, (36) 852.**
- die-back, notes, (26) 451.**
- diseases, notes, (30) 47.**
- diseases—**
- and injuries in Java, (35) 251.
 - and pests, (38) 447, 847.
 - in Ceylon, (33) 545; (35) 544.
 - Dutch East Indies, (31) 540.
 - Federated Malay States, (32) 549.
 - Malaya, (33) 150, 151.
 - Uganda—(35) 45.
 - notes, (28) 148, 241, 443; (29) 749; (34) 57, 442, 540, 849; (36) 746; (37) 252, 349; (38) 52, 53, 759, 854; (39) 146, 452, 453, 752; (40) 155, 249, 253, 349, 845.
 - treatment, (35) 459.
- districts, maintenance of health in, (27) 244.**
- dry raw, injury by chromogenic organisms in transit, (38) 759.**
- extraction of serum from, (27) 648.**

Rubber—Continued.

- fertilizer experiments, (29) 748, 843; (30) 622; (31) 421, 444; (32) 339, 743; (33) 50, 738; (34) 48, 838; (35) 241; (36) 141; (39) 647, 847.
- field experiments, reliability, (40) 46.
- from *Eucommia ulmoides*, (37) 417.
- Euphorbia lorifolia*, (28) 49.
- Indian hemp, (30) 614.
- osage orange, (29) 546.
- fungus disease affecting, (26) 853.
- green manure crops for, (34) 344.
- green manuring experiments, (30) 741.
- guayule, production, (39) 246.
- guayule, shrub, (27) 244.
- handbook, (33) 50; (40) 46.
- hydrometer experiments, (39) 647.
- industrial use of, (26) 844.
- industry—
 - chemicals in, (38) 715.
 - evolution, (26) 843.
 - in Africa, treatise, (26) 339.
 - Bolivia, monograph, (27) 148.
 - Brazil, (31) 444.
 - Ceylon, the Straits Settlements, and Deli, (31) 241.
 - Kaiser Wilhelm Land, (26) 745.
 - various countries, (27) 244.
 - of the Amazon, treatise, (35) 544.
 - of the East, (33) 543.
 - treatise, (37) 347.
- inner qualities, factors affecting, (37) 347.
- insects affecting, (26) 553; (27) 53; (28) 353; (30) 546, 753, 851; (33) 153; (34) 652, 851; (35) 463; (39) 453, 556; (40) 260.
- Kickxia and Manihot, use, (27) 245.
- Kickxia, crickets affecting, (30) 752.
- latex—
 - as affected by lime content of dilution water, (39) 451.
 - centrifugalization, (27) 244.
 - content and specific gravity, (38) 146.
 - natural coagulation, (37) 806.
 - physiology of, (31) 128.
 - rings, studies, (40) 448.
 - sugar as coagulant for, (40) 641.
- leaf disease—
 - description and treatment, (26) 651.
 - investigations, (38) 153, 356.
 - notes, (29) 250; (37) 838; (39) 653.
- leaf fall, control, (39) 459, 759.
- leaf fall disease, investigations, (38) 153, 456, 554.
- leaf-latex relations, (40) 153.
- Manihot, culture in East Africa, (30) 239.
- Manihot, treatise, (30) 146.
- manuring, (27) 244.
- manuring experiments, (40) 448.
- methods of analysis, (27) 205.
- monograph, (32) 339.
- new beetle affecting, (26) 151.
- new *Phytophthora* parasite, (40) 845, 852.
- nitrogen content, (39) 315.
- of Kongo forests, (26) 50.
- papers on, (35) 544.
- Para—
 - anatomy, (27) 44.
 - bacterial disease affecting, (29) 51.
 - black thread disease, (37) 757.
 - canker of, (32) 242.
 - carbohydrate constituents, (27) 615.
 - coagulation of latex, (35) 132; (38) 331, 715.
 - cortex nodules, (37) 727.
 - cortex structure in relation to yield, (39) 848.
 - cost of production, (27) 442.
 - culture, (27) 244; (38) 542; (39) 246.
 - culture—
 - and use, (27) 43.
 - in Trinidad, (34) 47.
 - in Uganda, (35) 544.
 - in Uganda, treatise, (30) 741.
 - diseases, (27) 244; (30) 248, 453, 850.
 - fertilizer experiments, (26) 339; (31) 444; (35) 842.
 - food storage and rest period in, (34) 240.
 - forms of, (28) 744.
 - fruit rot of, (31) 56.
 - fungus diseases of, (33) 449.
 - girth increment, (36) 447.
 - handbook, (28) 246.
 - in Cochin China, (31) 342.

Rubber—Continued.

- Para—Continued.
 - increase in tree girth, (39) 751.
 - investigations, (30) 447.
 - latex flow, (39) 647.
 - latex vessels in, (37) 147.
 - leaf diseases of, (26) 451; (36) 846.
 - Loranthus* sp. affecting, (26) 345.
 - natural accelerator, (37) 512.
 - natural coagulation in latex, (29) 149.
 - nitrogenous constituents, (36) 710.
 - nodules in cortex, (39) 431.
 - oil of, (37) 109.
 - plantings in Kongo, (26) 50.
 - preparation, (28) 645.
 - pustule formation on, (30) 544.
 - reagent, discovery, (27) 244.
 - reproduction in, (34) 639.
 - root disease of, (35) 551.
 - root diseases affecting, (28) 153.
 - seed cake, analyses and digestibility, (30) 566.
 - seed selection, (36) 843; (37) 837.
 - seed utilization, (39) 417.
 - seedling at different altitudes, (36) 345.
 - tapping during winter, (37) 838.
 - tapping experiments, (26) 444; (27) 244, 347, 442; (28) 147, 239, 440; (29) 240; (30) 535; (34) 47, 346, 537; (36) 45, 243; (38) 45, 46, 544; (39) 751.
 - tapping experiments, probable error in, (38) 544.
 - thinning experiments, (38) 247.
 - treatise, (27) 542.
 - variability of, (20) 141.
- pea disease affecting, (28) 652.
- pink disease—
 - host plants of, (35) 156.
 - notes, (32) 54; (38) 456.
 - studies, (34) 448.
 - treatment, (30) 845.
- plant, new, in Mexico, (28) 744.
- plantation—
 - of Ceylon, (37) 347.
 - preparation, (27) 244; (35) 544.
 - report, (40) 45.
 - spotting and discolorations on, (32) 347.
 - use, (27) 245.
- plantations, starting, (29) 747.
- planters, literature and labor for, (27) 244.
- plants, enemies of, (30) 851.
- plants of Italian Somaliland, (34) 152.
- preparation, (40) 46.
- preservation, (27) 244.
- products, examination, (31) 658.
- properties, (38) 146.
- protective function of laticiferous system, (40) 519.
- quality as affected by tapping system, (38) 146.
- quality in relation to age of trees, (37) 651.
- raw, adaptation, (27) 245.
- raw, testing, (27) 244.
- red specks, cause, (28) 552.
- renewed bark of different ages, yields, (40) 449.
- root disease—
 - host plants of, (28) 350.
 - notes, (33) 741; (37) 458, 839.
 - studies, (27) 854.
- root diseases, control, (39) 152.
- root diseases, notes, (29) 547.
- root rot, brown, (39) 153.
- root rot, notes, (31) 242.
- samples, moisture content, (39) 416.
- seed—
 - cake for cattle and sheep, (31) 766.
 - oil, utilization, (26) 746.
 - selection, (40) 153.
 - vitality, (26) 843.
- shares, factors affecting valuation, (27) 245.
- slug, notes, (26) 353.
- soils in Fiji, (37) 838.
- soils, requisites of, (28) 422.
- spot disease, studies, (40) 546.
- spotting due to fungi, (35) 544.
- spotting, notes, (30) 152.
- spotting, studies, (29) 451.
- stem disease, notes, (37) 453.
- stumps as disease carriers, (27) 451.
- tapping, (29) 748; (39) 357.

Rubber—Continued.

tapping—

- and storage of plant food in, (33) 543.
- by electricity, (28) 146.
- experiments, (26) 443; (27) 44; (29) 240, 644, 843; (30) 535, 646; (31) 241, 342; (32) 742; (33) 536, 542, 543, 646; (34) 47; (35) 451, 544, 649; (37) 147, 347; (39) 51, 451, 751, 848; (40) 843.
- experiments, probable error in, (37) 837.
- wounds, cicatrization, (37) 548.

termites affecting, (30) 250.

tests, (27) 245.

thrips, notes, (39) 360.

trade, statistics, (27) 245.

treatise, (30) 146, 347, 646; (31) 143, 144; (33) 343.

trees—

- anatomical studies, (29) 842.
- and reserves of the Amazon, (27) 244.
- modules on, (30) 850.
- of Costa Rica, (27) 147.
- variability, studies, (40) 546.
- varieties, (27) 438.
- varieties in West Africa, (27) 244.
- vines of Africa, (27) 244.
- viscosity, (27) 244; (39) 752.
- vulcanization, (27) 244.
- water content, (39) 806.
- wild, adulteration, (27) 244.
- wild lettuce, composition, (29) 241.
- yielding—
 - species of northern Madagascar, (28) 239.
 - species, paper on, (26) 843.
 - species, treatise, (34) 838.
- trees in Malay States, (36) 540.

Rubiaceae—

- bacterial symbiosis, (32) 327.
- nitrogen-fixing bacteria in leaves, (27) 225.

Rubidium—

- alum, fertilizing value, (30) 627.
- chlorid, fertilizing value, (30) 627.
- determination in plant ash, (38) 412.
- effect on *Aspergillus niger*, (28) 527; (30) 630.
- in plants, (38) 409.
- in soils, (31) 720.
- salts, effect on saccharification of starch, (26) 309.
- sulphate, effect on plants, (28) 527.

Rubus—

- forcing experiments, (38) 443.
- hybridization in (31) 47; (35) 227.
- occidentals, inoculation experiments with brown rot fungus, (33) 247.
- orange rusts, (37) 457; (38) 454.
- pollen sterility in, (37) 131.
- spectabilis, hybridization experiments, (28) 436.
- spp. as a medicinal plant, (30) 145.

Rudbeckia hirta—

- inheritance of variations in, (36) 522.
- inheritance studies, (40) 131.
- variation in, (27) 741; (32) 726.

Rudbeckias, varieties at Wisley, (33) 536.

- Rue, goats', culture experiments, (30) 632.

- Rufus scale, notes, (27) 357.

Rum—

- distillation, (35) 718.
- Jamaica, fermentations in, (26) 613.
- judging, (26) 209.
- notes, (26) 613.

Rumex—

- acetosella, description and eradication, (37) 239.
- acetosella, growth in alkaline media, (40) 40.
- spp., dissemination by farm animals, (26) 839.

Ruminant, fossil, from Rock Creek, Texas, (34) 264.

Ruminants—

- anatomy and histology of third stomach, (28) 271.
- anatomy of stomach, (27) 68.
- digestion in, (26) 469.
- direct transfer of food and drink of, (29) 66.
- resorption in stomachs of, (27) 571.
- respiration and assimilation in, (31) 71.
- respiration experiments, (32) 767.
- stomachs, protozoa in, (30) 577.
- Rumination, investigations, (26) 469.

Run-off—

- and evaporation, relation to precipitation, (40) 810.
- as affected by forests, (27) 348; (30) 620.

Run-off—Continued.

- computing, (33) 775.
- determination, (31) 384; (38) 590.
- estimating, (30) 288, 886.
- in eastern United States, (38) 717.
- maximum, determination, (35) 684.
- tables for estimating, (27) 385.

Ruppia maritima, culture for wild ducks, (33) 251.

Rural—see also Community and Country.

- administration in France, (40) 891.
- and mercantile economics, (40) 388.
- and urban populations, comparative birth rate, (38) 191.
- attitudes, theory of, (37) 491.
- banking conditions in Illinois, (31) 788.
- banking system in Virginia, (29) 91.
- children, survey in North Carolina, (40) 892.
- civilization, ideal, (35) 891.
- classes in Russia, evolution of, (30) 192.
- clubs in Wisconsin, (36) 192.

communities—

- bibliography, (32) 389.
- central electric station for, (30) 788.
- decline of, (26) 593.
- eugenics in, (40) 193.
- evolution, treatise, (28) 687.
- heat, light, and power for, (28) 487.
- improvement, (27) 898.
- in Wisconsin, (32) 593.
- organization, (33) 292.
- organization in Kansas, (34) 689.
- play and athletics for, (30) 496.
- problems of, (26) 594.
- recreational and social needs, (33) 190.
- social survey of, (26) 687; (31) 294.
- syllabus for study, (32) 592.

community—

- betterment work, (31) 499.
- center, plan for, (30) 496.
- interests, unifying, (32) 488.
- mobilizing, (40) 486.
- model, at Ghent Exposition, (30) 301.
- planning, (32) 10.

conditions—

- improvement, (29) 691; (31) 895; (32) 388, 592.
- in Alabama, (37) 91.
- Canada, (38) 791.
- Great Britain, manual, (30) 491.
- United States, betterment, (30) 305.
- continuation school for boys and girls, (27) 695.
- cooperative laundry, (35) 191.
- credit—see also Agricultural credit.
- banks in England and Wales, (27) 592.
- banks in Uruguay, (27) 795.
- decline in New England, (37) 593.
- demonstration schools, paper on, (33) 194.

depopulation—

- cause, (26) 592; (31) 294.
- cause and prevention, (30) 492.
- correcting, (29) 896.
- in Canada, (26) 896.
- England, (31) 490.
- England and Wales, (31) 295; (32) 390.
- France, (26) 387; (30) 91, 895.
- Germany, (26) 490.
- Great Britain, (30) 791.
- Illinois, (30) 895.
- Mexico, (26) 594.
- Michigan, (31) 595.
- Minnesota, (29) 490.
- Nebraska, (26) 593.
- Ohio, (26) 489.
- southern Ontario, (28) 688.
- various countries, (31) 592.
- notes, (29) 101; (30) 895.
- paper on, (27) 690.
- treatise, (33) 91.

development—

- in Burma, handbook, (31) 391.
- in Canada, (40) 790.
- treatise, (28) 790.

districts—

- cottage building in, (33) 490.
- electricity for, (32) 885.
- housing in, (33) 893.
- of Spain, characteristics, (39) 690.
- economic and social reforms, (40) 789.
- economics—
 - and sociology, bibliography, (28) 492.

Rural—Continued.

- economics—continued.
 - at International Congress of Agriculture, (30) 490, 591.
 - bibliography, (32) 194.
 - course in, (26) 387.
 - field of, (32) 105.
 - in Bombay Deccan, treatise, (28) 594.
 - experiment station work, (32) 701.
 - Minnesota, (33) 786.
 - New England in 19th century, (35) 588.
 - Spain, (28) 89.
 - instruction in, (27) 797; (28) 91.
 - manual, (29) 894; (30) 795.
 - new views concerning, (28) 292.
 - outline for study, (30) 795; (33) 598.
 - papers on, (27) 690.
 - problems in, (28) 790.
 - relation to farm management, (26) 10.
 - relation to production and distribution of wealth, (28) 88.
 - research work in, (29) 694.
 - scope of, (35) 496.
 - selected readings on, (35) 88.
 - studies, (30) 591.
 - textbook, (38) 196.
 - treatise, (20) 92; (28) 91; (31) 894; (36) 390.
 - use of statistics in, (28) 88.
 - woman's place in, (29) 898.
 - yearbook, (28) 795.
- economy—
 - as factors in success of the church, (29) 594.
 - in war time, statistics, (39) 688.
- education—
 - activities in, (30) 496.
 - associations in Saskatchewan, (37) 394.
 - conference at Worcester, Massachusetts, (37) 892.
 - Conference, report, (26) 491; (29) 296, 297.
 - conferences in Ontario, (30) 695.
 - discussion, (28) 790.
 - economic factors in, (36) 592.
 - improvement, (34) 897.
 - in Cook County, Illinois, (35) 894.
 - in United States, (36) 798.
 - papers on, (32) 689.
 - principles and methods, (26) 491.
 - problems, discussion, (38) 191.
 - treatise, (34) 292.
- electric service in Wisconsin, (37) 189.
- engineering—
 - as affected by European war, (36) 86.
 - at International Congress of Agriculture, (31) 185.
 - station in Tunis, (31) 587.
- extension schools in Ireland, (37) 294.
- fire control, (39) 594.
- homes—
 - beautifying, (36) 143.
 - betterment, (30) 462.
 - conveniences for, (35) 794.
 - cooling, (32) 592.
 - electricity for, (31) 591; (34) 488.
 - heating, (30) 789.
 - improvements for, cost, (31) 291.
 - lighting and heating, (36) 491.
 - numbering, (37) 889.
 - planning, (29) 186.
 - problems of, (31) 393.
 - sanitary engineering for, (32) 87.
 - sewage disposal for, (28) 86, 386, 487; (29) 194; (31) 786; (34) 88, 286, 790; (35) 691; (36) 591.
 - shower bath for, (30) 294.
 - treatise, (40) 486.
 - ventilation, (30) 691.
 - water power for, (26) 790.
 - water supply for, (28) 487; (30) 690; (34) 286, 790; (35) 587, 787; (36) 284.
- hospital, cooperative, in Pennsylvania, (31) 294.
- housing question in England, (30) 894.
- housing, treatise, (34) 895.
- hygiene, treatise, (31) 93.
- improvement clubs, (31) 690.
- improvement in North Carolina, (32) 388.
- improvement, treatise, (32) 388.
- indebtedness in United States, (29) 491.
- industries in Great Britain, government aid to, (28) 595.
- industries, mosquito-malaria losses in, (33) 255.

Rural—Continued.

- interests, organization, (31) 388.
- labor, *see* Agricultural labor.
- leaders, training, (32) 285.
- leadership, development, (37) 593.
- libraries, notes, (30) 496.
- life—
 - and education, progress in, (37) 393.
 - and education, treatise, (31) 193.
 - bibliography, (30) 197, 496; (31) 598, 692.
 - clubs, suggestions for, (31) 793.
- life conference—
 - at Ontario Agricultural College, (33) 295.
 - at University of Virginia, (28) 790; (32) 388.
 - in Pennsylvania, (26) 797.
 - in Vermont, (29) 197; (30) 695.
 - proceedings, (36) 688.
- life—
 - conveniences and enjoyments, book, (27) 690.
 - education for, (26) 691.
 - in Canada, manual, (30) 491.
 - Great Britain, treatise, (26) 489.
 - Japan, (35) 589.
 - Litchfield Co., Connecticut, (38) 191.
 - United Kingdom, treatise, (30) 791.
 - organization in, (27) 486; (35) 190.
 - survey in Ohio, (32) 388.
 - textbook, (27) 898.
 - treatise, (40) 292, 387, 485, 889.
- market conditions in New York, (37) 790.
- migration—
 - causes, (37) 390.
 - in United States, (34) 193; (35) 294.
 - psychic causes of, (35) 391, 392.
- moral life in middle West, (33) 787.
- neighborhoods, social centers in, (26) 488.
- New York, juvenile delinquency in, (40) 390.
- nursing service of American Red Cross, (30) 793.
- organization—
 - discussion, (35) 408.
 - in Ohio, (34) 895.
 - in Porto Rico, (40) 890.
 - in Tennessee, (34) 895.
 - work of, (32) 488.
- organizations of women, (40) 93.
- people, responsibility of, (32) 14.
- population—*see also* Agricultural population.
 - changes in, (26) 593.
 - in England and Wales, (31) 295, 691.
 - Finland, (30) 692.
 - France, (38) 494.
 - Germany, standard of living, (26) 157, 358.
 - Roumania, (33) 695.
 - United States, (27) 489; (30) 893; (32) 190, 689; (36) 591.
 - United States, mortality statistics, (33) 594.
- shifting of, (33) 190.
- problems—
 - discussion, (26) 92.
 - importance of, (30) 496.
 - in England, (40) 387, 687.
 - in New York, treatise, (30) 491; (32) 891.
 - in United States, (30) 390.
 - notes, (29) 894.
 - of today, treatise, (39) 794.
 - papers on, (27) 793.
 - relation to elementary schools, (33) 896.
- progress—
 - conference on, (34) 699.
 - in Missouri, (36) 93.
 - New England conference on, (28) 499.
- reconstruction, *see* Reconstruction.
- relations of the little town, (40) 892.
- research, standardization, (40) 890.
- sanitation—
 - editorial on, (30) 701.
 - in the Tropics, treatise, (37) 86.
 - investigations, (40) 593.
 - need for instruction in, (32) 190.
 - notes, (30) 390; (34) 790; (37) 592, 695; (38) 459.
- schools, *see* Schools, rural.
- settlement in New South Wales, (26) 291.
- social—
 - center work, nature study in, (31) 896.
 - centers in Wisconsin, (30) 694.
 - development, discussion, (30) 297.

Rural—Continued.

- social—continued.
 - problems, (33) 190.
 - science, bibliography, (26) 297.
 - survey, (40) 593, 596.
 - surveys, (31) 894; (36) 288.
 - surveys in Iowa, (39) 90.
 - sociology—
 - bibliography, (32) 194, 488.
 - instruction in, (38) 495.
 - outline for study, (30) 795.
 - relation to agricultural education, (30) 897.
 - relation to farmers' institutes, (32) 98.
 - teaching, (37) 93, 794.
 - treatise, (28) 595; (34) 790; (38) 89.
 - survey—
 - in Clarke County, Ga., with special reference to negroes, (33) 694.
 - Missouri, (37) 390.
 - Missouri, Morgan County, (35) 589.
 - northeastern Minnesota, (33) 786.
 - Oregon, Lane County, (36) 688.
 - southern Minnesota, (29) 489.
 - southwestern Ohio, (32) 592.
 - surveys—
 - in Georgia, (38) 191, 192.
 - in Iowa, (37) 592.
 - methods, (37) 592.
 - treatise, (33) 593.
 - teachers—
 - training, (32) 794; (33) 799.
 - training centers for, (33) 194, 195.
 - training schools, (39) 396.
 - welfare, treatise, (29) 190.
 - Rushes, wood, nematodes affecting, (30) 746.
 - Russian Bureau of Agriculture, yearbook, (26) 692.
 - Russian thistle, *see* Thistle.
 - Russula n.sp., description, (31) 127.
 - Rust—
 - epidemics, studies, (26) 142.
 - fungi—
 - culture experiments, (28) 242; (31) 540.
 - lipase in, (35) 225.
 - sexuality of, (33) 27.
 - spore formation in, (28) 745.
 - wintering in Bohemia, (28) 345.
 - wintering in uredo stage, (29) 346.
 - heteroecism, origin, (26) 142.
 - mite, notes, (31) 753; (34) 60.
 - mite on citrus fruit, (39) 161.
 - pomaceous, investigations, (32) 51.
 - sori, internal, (36) 845.
 - spores and mycelium in seeds of cereals, (33) 445.
 - spores in interior of grass seeds, (30) 241.
 - yellow, overwintering, (34) 51.
- Rustic borer, notes, (28) 653.
- Rustic moth, notes, (27) 552.
- Rusts—*see also specific host plants.*
- as affected by cold, (27) 45.
 - bibliography, (30) 350.
 - classification, (33) 245.
 - culture experiments, (28) 51; (30) 47.
 - effect on assimilation and respiration in leaves, (30) 453.
 - effect on transpiration of hosts, (39) 26.
 - endophyllum-like, of Porto Rico, (37) 552.
 - from New Mexico, (39) 147.
 - heteroecious, culture experiments, (36) 245.
 - in Great Britain, treatise, (30) 745.
 - India, (31) 145.
 - Indiana, (39) 549.
 - Nova Scotia, (30) 350.
 - Sotshi, (36) 245.
- infection experiments, (28) 149, 844; (33) 847.
- inoculation experiments, (26) 645; (32) 750; (35) 650.
- nomenclature, (32) 341.
- of Australia, (38) 350.
- of North America with caecoma-like sori, (34) 539.
- of Scotland, (33) 145.
- parasitism, (38) 443.
- physiological races of, (31) 146.
- prevention, (39) 52.
- propagation, (26) 844; (27) 746.
- relation to meteorology, (27) 149.
- spore formation in, (33) 145.
- spores, germination, (38) 224.
- studies, (31) 343; (36) 542; (37) 749; (38) 645; (39) 51.

Rusts—Continued.

- taxonomy, (33) 130.
 - transmission, (33) 445.
 - treatment, (27) 47.
 - tropical grass or sedge, (40) 344.
 - unattached aecial forms in North America, (29) 749.
 - Ruta graveolens, oil of, (36) 803.
 - Rutabagas, *see* Swedes.
 - Rutella lineola, notes, (30) 853.
 - Rutelinae of British India, (40) 63.
 - Rutgers College, notes, (26) 494; (29) 98; (31) 797; (35) 399; (36) 695.
 - Rutherglen bug, notes, (35) 853.
 - Rye—
 - Abruzzi, tests, (33) 831.
 - amino acid in, (33) 665.
 - amylase, studies, (31) 609.
 - analyses, (27) 341; (29) 367; (31) 864; (32) 171; (33) 734.
 - and cowpeas mixture, digestibility, (38) 778.
 - its milling products, composition, (30) 257.
 - rape as hog pasture, (40) 771.
 - vetch for forage, (33) 226.
 - and wheat—
 - comparative yields, (40) 625.
 - fertile hybrid of, (30) 341.
 - hybrid, description, (38) 735.
 - hybrid, heredity in, (37) 432.
 - as affected by—
 - aluminum, (40) 125.
 - boron, (39) 429.
 - cyanamid and dicyanodiamid, (40) 724.
 - greenhouse temperature, (37) 533.
 - leaf injuries, (31) 224.
 - removal of leaves, (30) 438.
 - smoke and flue dust, (26) 38.
 - soil volume and available plant food, (31) 132.
 - spacing in breeding plats, (30) 633.
 - water level, (26) 620.
 - as cover crop, (32) 332, 431; (34) 231; (39) 39.
 - fall-sown cover crop, (39) 532.
 - forage crop, (38) 827.
 - green manure, (26) 534; (32) 132, 423; (35) 438, 828; (39) 31, 326.
 - green manure for orchards, (40) 739.
 - green manure on alkali land, (32) 36.
 - green manure under dry-land conditions, (39) 131.
 - hog pasture, (39) 777.
 - meadow cover crop, (40) 137.
 - substitute for wheat, (38) 838.
- availability of nitrogen in, (26) 124.
- bacterial blight, notes, (35) 845.
- bran, analyses, (26) 210, 267, 363, 770; (27) 570, 774; (29) 367, 666; (31) 467; (32) 667; (33) 568; (34) 263, 665; (35) 867; (36) 167; (37) 471; (39) 270; (40) 665.
- bran, digestible nutrients, (28) 171.
- bread—
 - analyses, (33) 865.
 - composition and nutritive value, (34) 760.
 - digestibility, (29) 565.
 - Finnish, nutritive value, (30) 557.
 - making experiments, (36) 464.
 - notes, (27) 765.
 - recipes, (37) 364.
 - use of potato flour in, (26) 156.
- breeding, (30) 525.
- breeding—
 - and improvement in Sweden, (39) 833.
 - and selection, (31) 829.
 - experiments, (33) 134; (37) 827; (39) 126; (40) 233, 524.
- bushel weights, (37) 889.
- by-products, analyses, (27) 670; (28) 265; (38) 67.
- by-products, judging, (31) 809.
- cold resistance of, (30) 524.
- composition as affected by—
 - fertilization and soil preparation, (34) 230.
 - Fusarium, (36) 633.
- cooperative experiments, (27) 430.
- correlation in, (27) 435.
- cost of production, (29) 690; (32) 527; (34) 137; (35) 691.
- critical period of growing season, (39) 811.
- crossing experiments, (34) 228.
- cultivated, origin, (32) 131.

Rye—Continued.

- culture, (27) 32; (28) 43; (31) 35; (32) 132, 598, (34) 694; (35) 33; (37) 736; (38) 33, 527; (39) 834.
- culture—
 - continuous, (30) 424; (32) 533; (34) 138; (40) 125.
 - continuous, nitrogen accumulation in, (31) 318.
 - experiments, (26) 737; (27) 231, 232, 233, 336, 341, 530; (28) 431, 532; (29) 632, 735; (30) 33; (32) 132, 526, 528, 529, 530; (33) 31, 633; (34) 137, 138, 230; (36) 32, 532; (37) 436, 823; (38) 634, 832; (39) 124, 125, 126, 227, 735; (40) 333, 529, 735.
 - for chicken feed, (38) 827.
 - for silage, (26) 574.
 - for winter forage, (38) 735.
 - in cotton belt, (32) 533.
 - east Siberia, (32) 138.
 - eastern United States, (35) 832.
 - Indiana, (40) 735.
 - Michigan, (39) 820.
 - sand hills of Nebraska, (35) 827.
 - Southeastern States, (38) 341.
 - southern Idaho, (36) 227.
 - Texas, (29) 429; (35) 440; (40) 729.
 - Western Washington, (35) 696.
 - on moor soils, (30) 229; (39) 438; (40) 522.
 - on sandy soil, (34) 37.
 - on Wisconsin drift soil, (36) 623.
 - relation to rainfall, (37) 715.
 - under dry farming, (28) 533; (30) 435; (36) 528, 529; (37) 329.
 - under irrigation, (34) 528.
- cytological studies, (26) 325.
- dates of sowing, (27) 833.
- diseases, notes, (35) 47.
- diseases, treatment, (35) 652, 750.
- distance experiments, (30) 732.
- distillers' grains, digestibility, (29) 367.
- distribution of nitrogen in, (36) 269.
- "drunk bread" disease, studies, (35) 845; (36) 747.
- effect on—
 - activity of soil fungi, (36) 215.
 - baking quality of wheat, (34) 558.
 - following crop, (40) 135, 623.
 - milk and butter, (34) 570.
 - milling quality of wheat, (29) 866.
 - soil moisture, (34) 17.
 - succeeding crop, (38) 337.
- electroculture experiments, (27) 231.
- ergot, notes, (39) 851.
- fall-sown—
 - in Maryland and vicinity, (36) 736.
 - increasing acreage, (39) 532.
- feed, analyses, (26) 568, 665; (27) 170, 171; (29) 367; (30) 67; (31) 467; (32) 667; (36) 167, 268; (40) 571.
- feed, description, (40) 72.
- fertility and sterility, (38) 236.
- fertilizer experiments, (26) 423, 424, 522, 818; (27) 125, 530, 531, 626; (28) 125, 221, 626, 723, 726, 734; (29) 126, 331, 631, 632, 821; (30) 125, 220, 335, 834; (31) 123, 137, 217, 328, 421, 529, 820; (33) 219, 517; (34) 24, 327, 519, 622, 723, 820; (35) 126, 323, 325, 326, 425, 426, 427, 520, 629; (36) 217, 232, 325, 532; (37) 436, 823; (38) 132, 820; (39) 728; (40) 229.
- flour—
 - analyses, (34) 67, 164.
 - and rye bread, (36) 159.
 - availability of nitrogen in, (27) 723.
 - baking tests, (32) 252.
 - composition, (33) 564.
 - methods of analysis, (30) 612.
 - standards for, (30) 612.
- following alfalfa and feterita, (40) 432.
- following millet, (40) 734.
- foot disease, notes, (28) 51.
- for summer silage, (29) 473.
- frost injury to, studies, (38) 148.
- Fusarium disease—
 - in Bavaria, (30) 748.
 - notes, (29) 447.
 - treatment, (32) 842.
- Geocica squamosa on, (40) 753.
- germ, digestion coefficients, (28) 170.

Rye—Continued.

- germination as affected by—
 - depth of planting, (36) 437.
 - fertilizers, (29) 327.
 - silver nitrate, (34) 31.
- germination tests, (27) 341; (31) 733.
- germination tests in hydrogen peroxid, (27) 201.
- germinative ability and vegetative force, (29) 740.
- germs, analyses and feeding value, (29) 467.
- grades, (32) 138.
- grains, analyses, (27) 872.
- grass—
 - analyses, (26) 133; (27) 35.
 - analyses and culture, (31) 434.
 - as affected by radioactivity, (30) 224.
 - branching in heads, (37) 139.
 - breeding experiments, (26) 830.
 - composition and digestibility, (36) 469.
 - culture experiments, (28) 532; (29) 631; (30) 528; (33) 835; (38) 133; (40) 136.
 - culture in cotton belt, (32) 534.
 - culture in Uruguay, (26) 133.
 - English, breeding experiments and varieties, (39) 638.
 - English, digestibility, (32) 168.
 - fertilizer experiments, (26) 831; (31) 822.
 - for irrigated pastures, (40) 432.
 - frost injury to, studies, (38) 148.
 - growth on volcanic ash, (32) 36.
 - irrigation experiments, (32) 224.
- grass, Italian—
 - composition as affected by irrigation, (28) 332.
 - culture experiments, (33) 33.
 - culture in Philippines, (26) 361, 362.
 - digestibility, (32) 168.
 - irrigation experiments, (28) 130, 133.
 - seeding on ranges, (29) 531; (30) 35.
- grass, on peat soils, (39) 428.
- grass, perennial—
 - culture under irrigation, (33) 228.
 - for irrigated pastures, (39) 434.
 - seeding on ranges, (30) 35.
 - varieties, (30) 434.
 - variety tests, (40) 232.
- grass—
 - pollination experiments, (37) 735.
 - radioactive fertilizer for, (31) 129.
 - seed, germination energy of, (29) 538.
 - seed industry in New Zealand, (32) 335.
 - sulphur as fertilizer for, (30) 139.
 - varieties, (35) 31; (38) 535.
- grass, western—
 - alkali tolerance, (40) 719.
 - breeding experiments, (32) 532.
 - culture experiments, (32) 431, 529; (36) 32.
 - seeding experiments, (32) 531.
- grass—
 - wild, culture experiments, (33) 632.
 - yields, (30) 529.
- grasses, palatability, (34) 865.
- green, fertilizing value, (34) 129.
- green manuring experiments, (37) 425; (39) 725.
- ground, analyses, (27) 774; (29) 666; (34) 263; (39) 167.
- growing with legumes, (40) 822.
- growth as affected by—
 - electricity, (28) 827; (30) 827.
 - fertilizer salts, (29) 329.
 - manganese, (30) 823.
 - meteorology, (29) 510.
 - sulphur, (34) 541.
- growth—
 - in heated soils, (31) 216.
 - in water culture, (33) 223.
 - on volcanic ash, (29) 726; (32) 36.
 - studies, methods, (38) 526.
- hail injuries to, (33) 127.
- hail resistance as affected by fertilizers, (30) 519.
- hardiness, relation to sap density, (39) 430.
- harvested at different periods, germination, (39) 442.
- heads, fungus disease of, (34) 845.
- history of, (31) 131.
- hogging-down, (33) 871; (39) 779.
- hybridization experiments, (30) 733; (36) 436.
- improvement, (28) 43, 828; (35) 528.
- inheritance of albinism in, (31) 329.
- inoculation experiments, (35) 32.

Rye—Continued.

- insects affecting, (27) 54.
- irrigation by spraying, (33) 287.
- irrigation experiments, (27) 531; (29) 182, 631, 632; (31) 732; (33) 286.
- liming experiments, (29) 223; (39) 729; (40) 322.
- maltase content, (31) 204.
- manuring experiments, (40) 432.
- meal, analyses, (26) 665, 770; (28) 265; (30) 67; (31) 663; (32) 259; (34) 467.
- meal, digestibility, (30) 566.
- middlings, analyses, (26) 568, 665; (27) 170, 171, 670, 774; (28) 364, 464, 669; (29) 666; (30) 169, 868; (31) 467, 663; (32) 169, 667; (33) 568, 665; (34) 72, 263, 665; (35) 373, 562, 867; (36) 167, 268, 765; (37) 268, 471; (38) 369, 665; (39) 167, 270, 370, 773; (40) 72, 571, 665.
- nematodes affecting, (29) 151; (30) 448.
- occurrence of creatinin in, (26) 419.
- offals, analyses, (27) 570; (39) 270.
- origin and early habitat, (40) 632.
- pedigreed, in Wisconsin, (40) 624.
- pedigreed, yields in Wisconsin, (37) 438.
- phenological observations, (40) 811.
- planting and harvesting dates, (26) 533.
- pollen contamination, (40) 529.
- pollen, toxicity, (29) 377.
- pollination, (36) 527.
- prices and shrinkage, (34) 337.
- prices in Germany, (30) 896.
- production in—
 - Bohemia, (32) 827.
 - 1911, (26) 595.
 - Russia, (26) 294.
 - Spain, (28) 736.
- products, analyses, (28) 669; (29) 467; (32) 568.
- protection against frost, (27) 421.
- protein content, following black fallow, (34) 230.
- proteins, alcohol-soluble, (33) 162.
- rate of sowing tests, (27) 531.
- ratio of grain to straw, (36) 218.
- red dog flour, analyses, (34) 263.
- relation of tops to roots, (31) 733.
- right- and left-handedness in, (27) 236.
- root development with other crops, (26) 129.
- root system, (32) 634.
- Rosen, (37) 799; (40) 233.
- Rosen, in Michigan, (39) 335.
- rotation experiments, (36) 528; (40) 229.
- rust—
 - description, (35) 47.
 - in Bavaria, (33) 847.
 - in Canada, (34) 51.
 - notes, (26) 143.
 - specialization, (37) 149.
 - studies, (33) 546.
- seed color in, studies, (30) 339.
- seed examination, (33) 734.
- seed, tests and treatment, (29) 446.
- seed treatment, (33) 546; (39) 238.
- seeding dates, (40) 529.
- seeding experiments, (26) 833; (29) 426; (37) 226, 733; (38) 131; (39) 228.
- seedlings as affected by aluminum, (39) 115.
- seedlings as affected by ultraviolet rays, (26) 430.
- selection experiments, (40) 233, 524.
- selection of varieties, (28) 633.
- shorts, analyses, (37) 471.
- shrinkage tests, (38) 840.
- smut, description and treatment, (39) 248.
- smut, notes, (39) 353, 354.
- smut, studies, (36) 146.
- smut, treatment, (27) 445; (28) 546, 647; (30) 242.
- sowing with vetch, (40) 243.
- spring, yields, (30) 333.
- sprouts, digestibility, (30) 566.
- stalk disease, control in Westphalia, (26) 545.
- starch, color reaction, (40) 411.
- starch, gelatinization point, (30) 10.
- starch, studies, (31) 828.
- statistical notes, (40) 626.
- stem rust, treatment, (32) 843.
- straw—
 - analyses, (28) 768; (34) 164.
 - analyses and use as human food, (33) 866.

Rye—Continued.

- straw—continued.
 - bending and breaking tests, (32) 830.
 - composition and digestibility, (34) 565.
 - disintegrated, digestibility, (35) 474.
 - fertilizing value, (31) 822.
 - lime and phosphorus content, (26) 873.
- Svalöf Improved Wasa, (40) 530.
- threshing injuries, (37) 534.
- thrips affecting, (28) 452.
- transpiration in, (34) 522.
- Turkestan varieties, description, (30) 830.
- use in bread making, (40) 556.
- v. corn for pigs, (31) 869.
- varieties, (26) 733; (27) 32, 137, 334, 337, 531, 736; (28) 43, 532; (29) 222, 428; (30) 33, 435; (31) 829; (32) 224, 334, 431, 528; (33) 34, 632, 831; (34) 138, 733; (35) 229, 637; (36) 32, 33, 435, 437, 634; (37) 29, 132, 135, 330, 436, 438, 530, 641, 823; (38) 30, 131, 634.
- varieties—
 - for New South Wales, (27) 338; (38) 528.
 - for the Dakotas and Montana, (38) 230.
 - in Argentina, (40) 625.
 - new Swedish, (39) 833.
- variety from mountain regions of Italy, (37) 539.
- variety tests, (39) 125, 126, 228, 337, 436, 437, 738; (40) 233, 332, 333, 529, 530, 728, 730, 731, 732.
- volume weight and grain characteristics, (37) 643.
- water requirements, (26) 129; (29) 826; (32) 127.
- weed seeds in, (26) 135.
- wheat hybrids, natural, (34) 230.
- winter, culture in relation to meteorology, (34) 715.
- winter, rest period in, (30) 732.
- winter, spring harrowing, (39) 735.
- wintering of, (26) 733.
- yellow-foliage variety, (39) 741.
- yield as affected by—
 - previous crop, (30) 438.
 - previous soil treatment, (30) 834.
 - wind-breaks, (28) 40.
- yield in relation to—
 - meteorology, (34) 207.
 - physical properties of soils, (33) 815.
 - rainfall, (34) 319.
- yield on alfalfa stubble, (33) 828.
- yields, (27) 734; (28) 533; (29) 138, 425; (40) 735.
- yields in Australia, (38) 133.
- Sabal serrulata, studies, (35) 807.
- Sablefish, food value, (37) 165.
- Sabalodes caberata on olive, (38) 157.
- Sacbrood—
 - investigations, (36) 659.
 - notes, (29) 57; (31) 554.
- Saccharetin, notes, (27) 813.
- Saccharic acid, isolation from soils, (28) 418.
- Saccharimeter, revision of hundred point of, (30) 812.
- Saccharin—
 - as affected by enzymes, (26) 257.
 - as sugar substitute, (40) 864.
 - bibliography, (26) 257.
 - detection in foods and beverages, (26) 506.
 - determination, (35) 112.
 - determination in compressed tablets, (40) 613.
 - determination in foods, (31) 810; (37) 804.
 - effect on nutrition and health, (26) 257.
 - examination, (30) 258.
 - legislation in Sweden, (26) 564.
 - methods of analysis, (33) 414.
 - substances, decomposition, (26) 307.
 - toxicity, (28) 662; (34) 429.
 - use, (32) 456.
 - use in foods, (26) 868; (27) 665; (31) 557; (34) 256.
- Saccharogenic and amylolytic powers, comparison, (30) 463.
- Saccharometers, notes, (28) 614.
- Saccharomyces—
 - apiculatus, forms in wine, (30) 712.
 - apiculatus, notes, (29) 116.
 - cerevisiae—
 - notes, (28) 408.
 - occurrence in sugar, (26) 505.
 - symbiosis by, (29) 714.
 - thermal death point, (38) 468.
 - ellipsoideus, effects of salts on, (38) 503.

Saccharomyces—Continued.

- farinosus, assimilation of atmospheric nitrogen by, (30) 629.
- farinosus, growth in different media, (28) 824.
- minor in bread leaven, (35) 163.
- neoformans from tuberculous lungs, (39) 187.
- spp., assimilation of nitrogen by, (28) 35.
- Saccharomycetes, utilization of inulin by, (31) 224.
- Saccharomycodes in must, (30) 712.
- Saccharose—
 - absorption in the intestines, (28) 763.
 - as affected by chloroform and ether, (33) 523.
 - as protective agent for invertase, (26) 504.
 - cleavage in presence of invertase, (30) 806.
 - detection, (29) 808.
 - detection in honey, (26) 608.
 - determination, (26) 709; (27) 813.
 - determination in—
 - condensed milk, (29) 810.
 - food products, (27) 111; (29) 715.
 - frozen beets, (34) 13.
 - plants, (35) 206.
 - effect on—
 - ammonification, (28) 718.
 - availability of nitrogen, (28) 725.
 - plant respiration, (26) 628.
 - formation in sugar beets, (27) 526.
 - humification, (38) 26.
 - hydrolysis, (27) 804.
 - in beets, formation and distribution, (38) 26.
 - inversion by asparaginic acid, (32) 711.
 - inversion by bees' honey, (27) 813.
 - inversion in beets during storage, (30) 15.
 - occurrence in malt sprouts, (26) 24.
 - resorption in small intestine, (29) 268.
 - use in bread making, (33) 461.
 - utilization by pea seedlings, (27) 730.
- Saccharum spontaneum—
 - for shifting sands, (37) 333.
 - notes, (26) 362.
- Sacchulose as a feeding stuff for horses, (28) 571.
- Sacculated kidney in domestic animals, (26) 176.
- Sacculina, effect on fat metabolism of host, (26) 471.
- Sacks as carriers of swine fever, (32) 881.
- Saddle-back caterpillar, notes, (33) 58.
- Safety valve, glass, demountable, (40) 709.
- Safflower—
 - cake, fertilizing value, (38) 220.
 - cake, notes, (31) 366.
 - culture for seed, (37) 230.
 - disease, notes, (30) 47.
 - Indian, studies, (36) 228.
- Saffron, adulteration, detection, (30) 415; (32) 207.
- Sagaritis websteri n.sp., description, (29) 563.
- Sage—
 - analyses, (26) 612.
 - black, oil of, (33) 202.
 - mountain, water requirement, (32) 127.
 - thrasher, fruit eating habits, (27) 254.
- Sagittaria—
 - sagittifolia, nitrites in, (33) 627.
 - spp. as a duck food, (30) 545.
- Sagrinæ, catalogue, (30) 458.
- Sagrotan, disinfecting value, (32) 80; (40) 780.
- Sahlbergella spp., notes, (33) 153.
- Saharo, behavior of excised branch of, (35) 820.
- Sailors—
 - diet of, (32) 358.
 - discharged, employment in England and Wales, (35) 296.
 - discharged, employment on farms, (38) 293.
 - land settlement for, (36) 290; (37) 190.
- Sain, notes, (29) 443.
- Sainfoin—
 - culture experiments, (30) 228; (36) 32.
 - culture under dry farming, (30) 435.
 - diseases, notes, (31) 841.
 - effect on milk and butter, (34) 570.
 - fertilizer experiments, (26) 631.
 - germination tests, (30) 837.
 - insects affecting, (39) 556.
 - nodule bacteria of, (32) 33.
 - sclerotia disease affecting, (29) 845.
 - seed, germination energy of, (29) 538.
 - seed, vitality, (27) 740.
 - varieties, (26) 631; (30) 434.
 - yields, (30) 134.

Saissetia—

- hemisphaerica, see Hemispherical scale.
- oleae, see Black scale.
- spp., notes, (28) 453.
- Saj, notes, (29) 443.
- Saké—
 - composition, (28) 461.
 - utilization of rice proteins by, (29) 565.
- Sakurashima, eruption of, (31) 615.
- Sai—see also Shorea robusta.
 - beetles affecting, (36) 360.
 - disease, notes, (36) 449; (38) 351.
 - ecology and diseases, (38) 332.
 - forests as affected by drought, (29) 443.
 - reproduction, (36) 453.
 - seed, germination tests, (27) 147.
 - seedlings, development, (35) 649.
 - seedlings, dying back, (36) 345, 844; (40) 47.
 - tree disease, (39) 146; (40) 48.
- Salad plants, treatise, (37) 645.
- Salads, sandwiches, and chafing-dish dainties, (32) 560.
- Salamanders in Pennsylvania, (31) 648.
- Salep, analyses, (29) 463.
- Salicin—
 - as affected by emulsin, (27) 408.
 - as affected by enzymes, (28) 503.
 - decomposition by emulsin, (29) 505.
 - hydrolysis by enzymes, (29) 506.
- Salicornia, growth in presence of salt, (33) 222.
- Salicylic—
 - acid—
 - as a food preservative, (30) 364.
 - detection, (26) 412, 805; (27) 12; (28) 22.
 - detection in cheese, (32) 313.
 - detection in milk, (26) 610.
 - acid, determination—
 - error in, (26) 111.
 - in foods, (38) 314.
 - in fruit juices, (28) 112.
 - in wine, (35) 805
 - acid, effect on—
 - amylolytic action of malt extracts, (31) 711.
 - butter and margarin, (26) 778.
 - cyanogen formation in plants, (28) 527.
 - formation of botulinus toxins, (30) 479.
 - acid, methods of analysis, (33) 414.
 - acid, new reactions for, (27) 806.
 - aldehyde—
 - antizymotic action, (34) 815.
 - effect on growth of cowpeas, (36) 731.
 - effect on nitrification in soil, (38) 119.
 - effect on plants, (31) 620; (33) 328; (34) 20, 325; (36) 424.
 - in soils, (40) 22.
 - isolation from soils, (28) 418.
- Saligenin, utilization by plants, (36) 329.
- Saline—
 - cathartics, effect on metabolism, (28) 867.
 - claims in United States, (27) 22.
 - deposits in Great Basin, (29) 518; (31) 423.
 - deposits in southeastern California, (33) 518.
 - solutions, phototransparency of, (28) 317.
- Salines—
 - as source of potash, (27) 500; (28) 33.
 - of United States, composition, (28) 33, 725.
- Saliva—
 - amylolytic property, (28) 262.
 - effect on starch, (26) 872.
 - food accessories in, (40) 271.
 - horse, orokinase and ptyalin in, (40) 778.
 - human—
 - amylolytic activity, (40) 609.
 - as affected by diet, (29) 164.
 - diastatic power, (28) 567.
 - effect of nutrition on amylase content, (29) 568.
 - ox, diastase in, (36) 82.
 - relation to dental tartar, (26) 160.
- Salivary—
 - digestion, relation to gastric digestion, (34) 862.
 - glands in relation to gastric secretion, (40) 867.
 - glands in relation to thirst, (40) 767.
- Salix—see also Willow.
 - caprea, enzymes of, (31) 310.
 - hybridization experiments, (37) 432; (40) 546.
- Salmon—
 - analyses, (28) 358.
 - and its by-products, preparation, (38) 13.

Salmon—Continued.

canned—

- content of bacteria and tin, (38) 166.
- examination, (40) 205.
- in United States, (38) 866.
- nutritive value, (40) 66.
- nutritive value and recipes, (31) 555.
- cannery waste, fertilizer from, (26) 324.
- canning industry in North America, (28) 358.
- D. E., biographical sketch, (31) 697.
- fly, studies, (39) 257.
- industry in Alaska, (36) 862.
- reprocessed, as a food, (30) 861.
- shipping long distances, (35) 162.
- waste, analyses, (34) 28.

Salmonberries—

- breeding experiments, (28) 542.
- hybridization experiments, (28) 436.

Salmonberry leaf spot, notes, (33) 647.

Salmonellosis porcina, notes, (30) 185.

Salol, determination, (27) 499.

Salpingogaster nigra, notes, (30) 457.

Salsify—

- food value, (36) 863.
- mulching v. clean culture, (33) 534.
- root knot, notes, (39) 52.
- soft rot, notes, (31) 641.
- Verticillium diseases, (39) 852.
- white rust in Indiana, (39) 52.

Salsola—

- aphylla, analyses and digestibility, (27) 871; (32) 167.
- kali var. tenuifolia, eradication, (27) 733.
- vermiculata, analyses, (33) 466.

Salt—

- absorption by plants, (35) 435.
- adulteration, (29) 867.
- analyses, (28) 278; (30) 712.
- and alkali industry, treatise, (36) 428.
- and ice, lowest temperature with, (31) 615.
- and water, physiology of, (28) 261.
- application to heavy soils, (33) 323.
- as fertilizer for carrots, (30) 138.
- as winter spray for fruits, (30) 641.
- bacteriological analyses, (32) 269.
- bromin compounds in, (31) 657.
- cattle, analyses, (26) 267.
- content of—

- a Kamerun plant, (40) 326.
- leaves, induced variations in, (29) 134.
- nonhalophytes, variations in, (29) 28.
- sweat, (26) 766.

dairy, analyses, (26) 81.

deposits—

- in Oklahoma, (30) 724.
- of Plantegaarde, composition, (26) 426.
- of southwestern Virginia, (30) 724.
- of Stassfurt, origin, (28) 726.

destruction of mustard by, (27) 31.

destruction of weeds by, (26) 333.

determination in—

- butter, (27) 614, 812; (33) 16; (39) 505.
- foods and feeds, (32) 22, 415.
- sea water, (34) 504.
- soils, (32) 806.

distribution in butter, (30) 877.

effect in agglutination, (40) 778.

effect on—

- action of maltase, (28) 504.
- activity of malt diastase, (29) 528.
- anaphylaxis, (30) 478.
- availability of soil potash, (32) 126.
- bacterial development in butter, (30) 76.
- butter and cheese, (28) 278.
- butter flora, (34) 776.
- coffee and cacao, (27) 824.
- coherence of soils, (31) 123.
- cyanids, (26) 206.
- decomposition of feldspar, (30) 126.
- development of chromogens, (26) 327.
- flavor of cheese, (32) 176.
- germinating plants, (33) 128.
- germination of seeds, (29) 327.
- growth of Salicornia, (33) 222.
- invertase, (34) 408.
- legumes, (40) 434.
- nitrification, (27) 124.
- nitrification in soils, (28) 217.
- nutrition and renal excretion, (27) 464.

Salt—Continued.

effect on—continued.

- olives, (26) 825.
- plants, (32) 223; (36) 297.
- proteolytic enzymes, (27) 878; (29) 268.
- quality of sugar beets, (28) 44.
- respiratory pigments of plants, (26) 327.
- serum mixtures, (35) 680.
- soil bacteria, (26) 322.
- soils, (27) 622.
- soils and plants, (35) 423.
- sprouting of potatoes, (32) 829.
- storage butter, (38) 77.
- strength of concrete, (30) 589.
- sugar beets, (26) 438.
- water content of butter, (38) 781.
- weeds, (38) 632.
- yield and quality of bread, (30) 462.

feeding value, (28) 265.

fertilizing action, (26) 623.

fertilizing value, (26) 34, 630; (27) 125, 128; (30) 428; (31) 829; (32) 324; (33) 841; (34) 519, 726; (35) 327; (36) 220; (37) 636; (39) 117, 334, 428, 438; (40) 134.

figures in serum of sick horses, (40) 287.

fly in San Francisco Bay, (39) 362.

glycosuria, mechanism, (37) 64.

importance in rations, (40) 775.

marsh grass, analyses, (29) 270.

marshes of north coast of Porto Rico, (29) 513.

poisoning in pigs, (40) 684.

poisoning in pigs and poultry, (39) 680.

River national bird reservation, (37) 355.

role in plant nutrition, (33) 725.

role in preserved foods, (28) 361.

sea, as fertilizer for beets, (26) 43.

"sickness," rôle of Panicum combsii in, (40) 137.

solutions, effect on—

- germination of seeds, (27) 330; (29) 218.
- metabolism, (28) 866.
- plants, (29) 218.
- potatoes, (27) 748.
- soil temperature, (29) 620.

spots, relation to plants, (29) 422.

sterilization of soils by, (32) 816.

toxicity, (28) 661.

toxicity toward barley, (33) 323.

toxicity toward nitrogen-fixing organisms, (28) 519.

trough for sheep, description, (37) 867.

use against Canada thistles, (30) 639.

use in wound treatment, (35) 882.

value in the diet, (29) 664.

Saltbushes—

- as cover crops, (32) 729.
- culture experiments, (30) 632.
- destruction by white fly, (26) 859.
- indigenous to Australia, (26) 830.
- seeding on ranges, (30) 35.

Salton Sea, studies, (29) 415; (32) 429.

Salt peter—see also Potassium nitrate and Sodium nitrate.

- as milk adulterant, (26) 673.
- as source of potash, (34) 327.
- composition and use, (27) 727.
- deposits, new, in Brazil, (39) 817.
- determination in meat, (27) 504.
- effect on flow of rubber latex, (29) 748.
- effect on nutrition and health, (26) 70.
- fertilizing value, (26) 232; (27) 336, 337.
- for rubber trees, (26) 339.
- industry in India, (26) 524.
- origin and extraction in India, (37) 722.
- refining in India, (26) 524.
- use in cheese making, (34) 574.

Salts—

absorption—

- and excretion by roots, (26) 624; (34) 224.
- by cultivated soils, (34) 324.
- by plants, (35) 432, 433.
- by roots, (34) 334; (36) 128.

acid, alkaline reaction in soils, (30) 122.

acid, effect on Aspergillus niger, (29) 734.

addition to diet, water distribution and edema following, (33) 664.

alkali, determination in soils, (28) 318.

alkali, effect on—

- bacteria, (32) 320.
- growth of rice, (30) 728.
- nitrification, (38) 322.

Salts—Continued.

- alkali, effect on—continued.
 - plants, (28) 527.
 - soil bacteria, (28) 519, 719; (33) 323.
- and acids, antagonism between, (34) 429.
- antagonism, (30) 98, 366, 824, 833; (32) 35, 223, 320, 728; (31) 317, 627, 721; (33) 31, 323, 521, 628; (34) 126; (35) 823; (36) 128; (37) 431.
- antagonism, additive effects in, (34) 730.
- antagonism as affecting soil bacteria, (31) 317.
- as affected by humic acid, (34) 324.
- as affected by soil moisture and manure, (36) 816.
- condition in milk, (32) 607.
- crystallizable, photomicrographs, (36) 804.
- distribution in living matter, (30) 367.
- effect on—
 - action of rennet on milk, (26) 477.
 - amylolytic ferments of bread, (34) 660.
 - Aspergillus niger*, (27) 848.
 - bacterial activities of soil, (36) 515.
 - concrete, (29) 686, 891.
 - growth of soy beans, (36) 31.
 - heliotropism, (34) 333.
 - lime requirement of soils, (36) 210.
 - metabolism of pigs, (30) 268.
 - oxidative processes in the body, (33) 69.
 - permeability of protoplasm, (33) 328.
 - plant growth, (29) 329.
 - reproductive process, (34) 766.
 - respiratory metabolism, (32) 860.
 - root development, (29) 328.
 - secretion of diastase by *Penicillium camemberti*, (36) 328.
 - seeds and seedlings, (29) 421.
 - soil acidity, (35) 22.
 - soils, (26) 618.
 - starch ferments, (27) 109.
 - wheat seedlings, (31) 426.
- flocculation of turbid liquids by, (32) 121.
- importance in health and disease, (30) 367.
- in sandy loam and adobe soils, studies, (30) 517.
- injurious to cotton plant in Egypt, (34) 227.
- inorganic, effect on—
 - Actinomycetes, (36) 526.
 - catalase, (26) 504.
 - pancreatic lipase, (31) 264.
- metallic—
 - effect on lupine radicles, (32) 128.
 - effect on olives, (26) 825.
 - effect on yeasts and other fungi, (28) 527.
 - fertilizing value, (31) 821.
 - reaction with soluble carbonates, (31) 504.
 - role in nitrogen assimilation by green plants, (28) 328.
 - toxicity, (28) 662.
- mineral, role in metabolism of infants, (29) 366.
- movement in alkali soils, (34) 16.
- movement in semiarid soils, (28) 421.
- neutral, effect on action of alcohol on plant cells, (34) 333.
- neutral, effect on castor bean lipase, (30) 409.
- penetration of protoplasm by, (26) 823.
- physiological balance in water cultures, (36) 328.
- plants tolerating, (40) 221.
- rare earth, effect on coagulation of milk by rennet, (30) 312.
- reactions of ions and molecules, (37) 201.
- relation to soil colloids, (35) 16, 622.
- role in infant feeding, (35) 165.
- role in plant life, (34) 135.
- role in preservation of life, (26) 271.
- soil, effect on vegetation, (27) 215.
- soil, relation to cultivated plants, (28) 426; (31) 627.
- soluble—
 - effect on absorption of phosphates by soils, (26) 122.
 - effect on clay, (27) 620.
 - effect on soils, (26) 216.
 - excess in humid soils, (38) 418.
 - movement in soils, (33) 513; (38) 417.
- toxic, as affected by other salts, (30) 31.
- toxic inorganic, effect on plant growth, (30) 130.
- toxicity toward—
 - barley, (33) 323.
 - Monilia sitophila*, (31) 730.
 - plants as affected by calcium, (29) 322.
 - Wagner, fertilizing value, (27) 342.
- Saltusaphis*, synopsis, (37) 157.

Salvarsan—

- administration, (26) 677; (28) 80.
- bactericidal action, (39) 488, 590.
- detection, (26) 411.
- effect on plants, (27) 131.
- fixation by blood, (35) 74.
- qualitative and quantitative tests, (39)-508.
- toxicity, (38) 181.
- trypanocidal activity, (36) 679.
- use against—
 - anthrax, (27) 680; (29) 679; (36) 678.
 - contagious pneumonia, (27) 289.
 - dog distemper, (32) 84; (37) 584.
 - dourine, (28) 478.
 - equine influenza, (26) 288, 486; (28) 287, 483; (29) 385; (30) 186.
 - glanders, (27) 183; (28) 79.
 - infectious bulbar paralysis, (33) 179.
 - nonsyphilitic diseases, (31) 775.
 - rabies, (29) 679; (30) 281.
 - septic pneumonia, (31) 85.
 - spirochetosis in fowls, (27) 385.
 - surra, (29) 176.
- Salvia—
 - grandiflora, oil of, (36) 803.
 - nemorosa, root system, (37) 542.
 - pratensis, betains in, (27) 204.
- Salvinia natans, reactions of root hairs, (29) 828.
- Samar as a reclamation crop, (30) 234.
- Sambucus—
 - canadensis, notes, (30) 145.
 - Coryneum-like structures on, (33) 545.
 - nigra, cork from, (31) 312.
- Samia cecropia, *see* Cecropia moth.
- Sampling—
 - device for organic materials, (37) 711.
 - standard methods, (35) 415; (38) 506.
- San borer, notes, (31) 850.
- San José scale—
 - control in—
 - Florida, (28) 197.
 - Kansas, (37) 357.
 - Maryland, (27) 552.
 - Missouri, (33) 253.
 - West Virginia, (26) 840; (28) 842; (35) 657.
 - distribution in South Africa, (30) 549.
 - immunity to sprays, (40) 753.
 - in Nova Scotia, (31) 251.
 - life history and remedies, (33) 452.
 - notes, (26) 59, 147, 348; (27) 299, 455, 658, 755, 857; (28) 156, 158, 235, 353, 653, 752; (29) 53, 153, 251, 353; (30) 53, 157, 655, 752; (31) 60; (32) 448, 850; (33) 153, 252, 558; (34) 158, 162, 752; (35) 253, 356; (36) 357, 755, 856; (37) 358; (38) 653; (40) 163.
 - occurrence in Transvaal, (26) 455.
 - occurrence in West Virginia, (26) 753.
 - parasites of, (29) 758; (30) 661; (31) 355; (32) 245, 449.
 - remedies, (26) 755; (28) 352; (32) 754; (33) 253; (34) 548, 551; (36) 551; (37) 54; (38) 540, 653.
 - spraying, (39) 360, 465.
 - studies, (37) 158.
 - susceptibility to sprays, (34) 551.
- Sanai as a green manure, (31) 230; (34) 37.
- Sanatogen, examination, (28) 259.
- Sand—
 - and gravel deposits in Virginia coastal plain, (29) 513.
 - and plant silica, differentiating, (40) 610.
 - application to grass lands, (32) 630.
 - areas, reclamation, (28) 230; (29) 427.
 - blast tests for timber, (27) 348.
 - cement, investigations, (29) 183.
 - cherry, Champa, description, (30) 640.
 - clay mixtures for road surfacing, (31) 289.
 - concrete, grading, (38) 389.
 - cultures—
 - balance of nutrients in, (36) 212.
 - nitrifying bacteria in, (27) 634.
 - renewal of plant nutrients in, (36) 31.
 - diluvial gray, notes, (27) 416.
 - distribution in ground cinnamon, (26) 564.
 - dunes—
 - afforestation, (26) 543.
 - control and utilization, (35) 719.
 - devastation by, (37) 720.
 - evaporation in, (27) 636.
 - fixation and reclamation, (30) 239.
 - fixation in Russia, (27) 148.

- Sand**—Continued.
 dunes—continued.
 of Coos Bay, Oregon, (31) 744.
 of New Zealand, reclamation, (26) 223.
 reclamation, (27) 245.
 reclamation in California and Oregon, (33) 738.
 spits, and wastes, treatise, (32) 30.
 weathering, (28) 220.
 effect of fineness on strength of mortar, (33) 781.
 effect on—
 nitrication, (33) 620.
 nitrication in clay soils, (29) 622.
 soil granulation, (26) 420.
 swamp lands, (31) 516.
 temperature of moor soils, (27) 516.
- flies**—
 flagellate infection of, (32) 59.
 habits, (29) 856.
 notes, (35) 552.
 relation to pellagra, (26) 656; (27) 156; (29) 357; (31) 455.
 relation to verruga, (29) 856.
 review of literature, (30) 159.
 for concrete, specifications, (32) 484.
 for concrete, testing, (31) 386.
 from Vesuvius, analyses, (27) 422.
 gray, formation and composition, (27) 619.
 hills, forestation, (29) 43.
 hills of Nebraska, ecological study, (31) 425.
 hills of Nebraska, reforestation, (31) 744.
 production in 1912, (30) 87.
 spur, notes, (26) 361.
 spurry, growth on volcanic ash, (32) 36.
 sterile, changes in by cropping, (33) 325.
 wearing tests, (33) 781.
- Sandal**—
 spike disease, notes, (38) 548, 855; (40) 48.
 spike disease, studies, (36) 652; (39) 255, 654.
 tree, host plants of, (29) 843.
- Sandal woods**—
 of Hawaii, (36) 539.
 oil value, (33) 444.
- Sandan**, notes, (29) 443.
- Sandpipers**, dying around Great Salt Lake, (33) 251.
- Sands**—
 grading for road construction, (37) 787.
 of New Hampshire and Vermont, (34) 737.
 of West Virginia, (34) 686.
 organic impurities, test for (37) 490.
 shifting, grasses for, (37) 333.
- Sandstone**—
 cementing material, plant food value, (27) 513.
 plant food value, (31) 621.
- Sandwich caterpillar**, notes, (30) 660.
- Sandwiches**—
 examination, (31) 557.
 notes, (31) 760.
 nutritive value and use, (30) 761.
 salads, and chafing-dish dainties, (32) 560.
- Sandy River basin**, Oreg., hydrology, (32) 382.
- Sanguisorba minor**—
 culture in Hawaii, (32) 730.
 culture in Rhodesia, (27) 32.
 notes, (30) 434.
- Sanidin**—
 as source of potash, (26) 426; (30) 216.
 fertilizing value, (27) 725.
- Sanitary**—
 and applied chemistry, (39) 501.
 closets, chemical, (38) 84, 85.
 conditions in Alaska, (31) 360.
 inspection laws in Ohio, (33) 261.
 inspections in Indiana, (28) 65.
 science, tables of statistical error, (26) 773.
- Sanitation**—
 bibliography, (31) 196.
 chlorid of lime in, (29) 512.
 handbook, (31) 387.
 in canning factories, (32) 64.
 in the Tropics, (31) 489.
 military, textbook, (34) 369.
 railway, notes, (30) 862.
 relation to geology, (30) 212.
 rural, *see* Rural sanitation.
 textbook, (40) 694.
 treatise, (32) 659.
- Sann**, seed position in planting, (40) 635.
- Sanninoidea**—
exitiosa, *see* Peach borer.
opalescens, notes, (27) 857.
opalescens, studies, (26) 61.
pacifica, remedies, (27) 54.
- Sansevieria**—
 culture and uses, (30) 529.
 fiber from, (33) 530.
- Santalum album**, *see* Sandal tree.
- Santonin**—
 as vermifuge, (33) 884.
 determination in Levant wormseed, (32) 300.
- Sap**—
 acidity, relation to rust resistance in wheat, (30) 242.
 as affected by heat, (31) 522, 627.
 ascent—
 in plants, (27) 222; (34) 727; (35) 25, 26, 223, 331, 432.
 plants, liquid pressure theory, (36) 822.
 plants, tension hypothesis, (37) 128.
 plants, treatise, (33) 127.
 trees, (33) 827.
 role of plant cells in, (27) 829.
 studies, (29) 422, 524, 828.
 composition, (35) 822.
 concentration—
 and height of leaf insertion, (38) 126.
 determination, (35) 633.
 of Jamaican desert plants, (39) 29.
 of Jamaican mountain plants, (38) 125.
 seasonal variations in, (35) 26.
 studies, (40) 130.
 density and freezing point, studies, (28) 824.
 density, relation to hardness, (39) 430.
 depression of freezing point, (36) 823.
 descent, studies, (32) 523.
 electrical conductivity in vegetable tissues, (34) 825.
 extraction by pressure, (39) 224.
 extraction from plant organs, (29) 828.
 flow, cause, (27) 153.
 flow, stimulation by nutrients, (27) 538.
 of desert plants, (37) 630.
 desert plants, cryoscopic constants, (36) 823.
 leaves, osmotic pressure, (27) 631.
 plants in mountain and desert habitats, (37) 525.
 wild grafts, effect on domesticated plants, (39) 525.
 osmotic pressure, (38) 523.
 poisoning as remedy for—
 San José scale, (32) 754.
 tree scale, (32) 152.
 stain, prevention, (26) 339.
 studies, (32) 139.
 tensile strength, (31) 626.
 transfusion of, (34) 341.
 vegetable, freezing point of, (31) 221.
 vegetable, physico-chemical properties of, (31) 427; (34) 30.
- Saperda**—
calcarata, notes, (28) 161, 353.
calcarata, studies, (40) 861.
candida, *see* Apple tree borer, round-headed.
punctata, notes, (30) 455.
tridentata, *see* Elm borer.
vestita, notes, (30) 655; (35) 54.
- Sapindus emarginatus**, epiphytes on, (28) 852.
- Saponaria officinalis**, rôle of saponins in, (33) 524.
- Saponin**—
 detection, (27) 505; (31) 713.
 from *Yucca filamentosa*, (37) 9.
 in Mowrah meal, (30) 267.
 insecticidal value, (34) 359.
 of alfalfa, (40) 607.
 plants of Chile, (38) 336.
 reactions of, (26) 107.
 use, (32) 456.
 use in milk examination, (27) 614.
 variation in corn cockle seeds, (28) 525.
- Saponins**—
 as a source of carbohydrates for vegetation, (30) 129.
 biochemical investigations of, (33) 524.
 detection, (32) 20.
 poisonous and nonpoisonous, differentiation, (32) 20.
 use in insecticide emulsions, (26) 153.

- Sapotacea, description, (29) 60.
 Sapote, analyses, (40) 763.
 Sapote, white, culture in California, (26) 743.
 Sapotoxins, detection in flour, (38) 712.
 Sappaphis n.g., description, (40) 60.
 Saprolegniaceae, vegetative vigor and reproduction in, (34) 824.
 Sapromyza bispina, relation to fire blight, (36) 552.
 Sapromyzidae, synopsis, (29) 358.
 Sarcina lutea—
 ammonifying power, (31) 317.
 occurrence in sugar, (26) 505.
 organism resembling in condensed milk, (26) 81.
 Sarcocystis—
 macropodis, notes, (27) 883.
 muris, biology, (32) 353.
 muris, sexual evolution, (36) 557.
 n.sp., notes, (28) 782.
 n.spp., descriptions, (32) 353.
 tenella—
 affecting sheep, (28) 586.
 in sheep, studies, (29) 81.
 infestation of lambs by, (37) 374.
 life history, (39) 162.
 studies, (34) 384, 658; (40) 585.
 toxic substance in, (30) 577.
 Sarcocysts, notes, (27) 181.
 Sarcoma—
 diagnosis, (31) 876.
 implanted in chick embryo, behavior, (27) 368.
 in domestic fowls, investigations, (31) 287.
 in fowls, variations in, (29) 385.
 spindle-celled, transmission, (28) 287, 288.
 transmission by bed bugs, (31) 550.
 Sarcomata, spindle-celled, in chickens, (31) 485.
 Sarcomatosis, generalized, in fowls, (39) 590.
 Sarconesia chlorogaster, notes, (26) 781.
 Sarcophaga—
 aldrichi n.sp., description, (36) 57.
 and allies in North America, (37) 160.
 caridei, notes, (29) 354.
 caridei, parasitic on locusts, (37) 357.
 caridei, studies, (38) 258.
 eleodis, life history, (39) 264.
 falculata, studies, (29) 760.
 froggatti n.sp., description, (36) 858.
 fuscicauda, description, (35) 58.
 georgina, notes, (30) 656.
 haemorrhoidalis larvae in human intestine, (37) 853.
 Hawaiian, key, (40) 263.
 (Helicobia) helices, notes, (33) 749.
 kellyi n.sp., description, (32) 60.
 nigriventris, notes, (39) 766.
 spp., notes, (38) 161.
 spp., parasitic on gipsy moth, (31) 652.
 utilis n.sp., description, (33) 860.
 vericauda, notes, (34) 66.
 Sarcophagid—
 fly larvae, reactions to light, (27) 655.
 larvae from painted turtle, (34) 756.
 Sarcophagidae—
 economic relations, (34) 251.
 of New England, (33) 157; (36) 57.
 parasitic, review of literature, (32) 60.
 Sarcophagini, genera of, (39) 467.
 Sarcophagula occidua, notes, (39) 861.
 Sarcophylla gallinacea, notes, (32) 757.
 Sarcoptes scabei, infection of goats with, (31) 177.
 Sarcosporidia—
 in Panama, (33) 863.
 occurrence in domestic animals, (28) 885.
 relation to cnidosporidia of invertebrates, (35) 384.
 review of investigations, (36) 252.
 studies, (30) 577.
 zoological position, (37) 53.
 Sarcosporidin, notes, (30) 577.
 Sarcosporidiosis—
 bovine, in Portugal, (37) 81.
 cutaneous, in a cow, (28) 782.
 in sheep, (28) 586; (29) 81.
 relation to scrapie in sheep, (32) 276.
 Sardelles, fat content, (26) 258.
 Sardine factory wastes, analyses and feeding value, (39) 70.
 Sardines—
 American, packing, (28) 358.
 ammonia and amines in, (40) 411.
 autodigestion experiments, (28) 66.
 Sardines—Continued.
 bacteriology, (40) 555, 764, 864.
 examination, (38) 166.
 fat content, (26) 258.
 Sargatis—
 sp., notes, (29) 855.
 websteri, notes, (28) 253.
 Sarothamnus scoparius, behavior on lime soils, (31) 425.
 Sarothromyia femoralis, notes, (39) 861.
 Sarothripinae in British Museum, catalogue, (28) 856.
 Sasa paniculata, carbohydrates of, (29) 803.
 Saskatchewania canadensis n.g. and n.sp., description, (34) 64.
 Sassafras—
 Brisbane, essential oil of, (36) 611.
 varifolium, mucin-like substances of, (31) 409.
 Saturnids of Senegal, (27) 456.
 Saturniid moth—
 larvae, use as food, (27) 258.
 longevity, (26) 655.
 Saturniidae, monograph, (32) 850.
 Sauces, examination, (26) 660.
 Sauerkraut—
 analyses, (26) 157.
 fermentation, (37) 165, 208, 806.
 making and storing, (38) 567.
 Saunders, W., biographical sketch, (31) 698.
 Sauromatum venosum, respiratory enzymes of, (28) 528.
 Sausage—
 analyses, (29) 59, 863; (31) 357.
 bacteria of, (27) 461; (32) 252.
 bacterial examination, (34) 760.
 binder, description, (31) 460.
 boric acid in, (36) 466.
 detection of added water in, (29) 460; (37) 414.
 law in Pennsylvania, (27) 767.
 manufacture, (27) 279.
 methods of analysis, (29) 863.
 notes, (31) 658.
 pork, examination, (28) 166.
 pork, preservation, (29) 312.
 preparation, (28) 860; (35) 114; (36) 114.
 preserved, paper on, (35) 859.
 truffle, adulteration, (26) 258.
 viscose as a casing for, (32) 660.
 water content, (34) 365; (40) 807.
 Savin oil poisoning, detection, (28) 583.
 Sawdust—
 analyses, (29) 467.
 as feeding stuff for horses, (28) 571.
 digestibility, (28) 669; (29) 65, 467.
 effect on soil phosphates, (34) 421.
 effect on soil potash, (36) 625.
 extinguishing fires with, (28) 788.
 Sawflies—
 Cornish, studies, (28) 162.
 Japanese, in United States National Museum, (26) 63.
 mating habits, (34) 557.
 new, in United States National Museum, (29) 563.
 notes, (26) 147; (30) 60; (40) 459, 655, 761.
 of Quebec, (30) 454.
 Sawmill waste as source of potash, (33) 819.
 Sawmills—
 portable, forest utilization with, (34) 642.
 small, (40) 291.
 Saxifraga peltata as host of grape root worm, (2) 657.
 Saxifrages, treatise, (34) 45.
 Sayornis nigricans, destruction of locusts by, (28) 351.
 Sayornis spp., feeding habits, (28) 57.
 Say's blister beetle, notes, (34) 752.
 Scabies—see also Mange and specific animals.
 control in Kentucky, (39) 679.
 in horses and sheep, notes, (26) 373.
 in sheep, treatment, (26) 587.
 investigations, (31) 177.
 notes, (40) 183, 778.
 prevalence in Prussia, (27) 181.
 Scale—
 black, see Black scale.
 flat, notes, (27) 155.
 fungus, new, description, (39) 52.
 insect diseases, (30) 55.
 insect eggs, action of cyanid gas on, (32) 245.

Scale—Continued.

- insects—
 African, descriptions, (27) 358.
 catalogue, (28) 754.
 control, (37) 55.
 control by natural enemies, (35) 254.
 destruction by *Chilocorus similis*, (29) 258.
 destruction by fungi, (28) 556.
 dispersion by wind, (36) 55.
 eggs as affected by hydrocyanic acid gas, (33) 855.
 fungoid parasites of, (33) 558.
 fungus parasites of, (28) 453, 752; (30) 455.
 in British Guiana, (31) 454.
 Colorado, notes, (40) 161.
 Florida, (38) 562.
 German East Africa, (30) 754.
 Hawaii, (34) 59.
 Indiana, (31) 452; (35) 461.
 Missouri, (37) 760; (38) 653.
 South Carolina, notes, (29) 53.
 insects, injurious to—
 citrus fruits, (29) 654.
 coffee, (36) 354.
 limes, remedies, (31) 58.
 mangoes, (26) 553.
 oranges, (27) 455.
 insects—
 insect parasites of, (28) 452.
 monograph, (35) 256.
 new, of Japan, (37) 358.
 notes, (26) 556; (27) 357, 860; (28) 854; (32) 448, 550.
 on citrus fruit, (39) 161, 463.
 on lime trees, destruction, (26) 534.
 parasitism in California, (26) 863.
 preparation for microscopical study, (32) 57.
 remedies, (26) 561; (27) 357, 857; (29) 262; (39) 225, 763.
 resistance to fumigation, (36) 154.
 studies, (28) 754.
 table for separation, (29) 251.
 treatise, (28) 556.
 young, locomotion, (26) 149.
 "longulus" or soft gray, notes, (28) 452; (30) 252.
 oblong, notes, (36) 355.
 pest, oriental, notes, (27) 255.
 red, Florida, notes, (27) 455.
 red, notes, (29) 654.
 red, on olive, (38) 157.
 red, parasite of, importation into California, (30) 753.
 red, studies, (26) 553.
 rufus, notes, (27) 357.
 scurfy, *see* Scurfy scale.
 soft, notes, (26) 556; (28) 854; (34) 652.
 soft, parasites of, (29) 654.
 white, notes, (27) 857; (29) 654.
 yellow, notes, (26) 553.
 Scales—
 Argentine, new, (40) 61.
 formation on chicks' feet, (31) 369.
 Scallops—
 creatin and creatinin content, (31) 760.
 culture, (27) 472.
 examination, (31) 64; (32) 854; (36) 159.
 handling and marketing, (31) 63.
 sewage polluted, danger from (27) 866.
 Scalopus aquaticus, notes, (31) 154.
 Scambus ephialtoides n.sp., description, (38) 565.
 Scambus evertivorus n.sp., description, (34) 456.
 Scapteriscus—
 didactylus, *see* Mole cricket.
 vicinus, *see* Mole cricket, West Indian.
 Scaptomyza flaveola, parasite of, (29) 359.
 Scarabaeid larvae, rearing, (33) 256.
 Scarabaeidae, notes, (26) 60.
 Scarabaeus hemipterus, notes, (34) 454.
 Scarifiers, motor, notes, (31) 188.
 Scarlet—
 fever, relation to milk supply, (28) 674.
 runner, bud variation in, (35) 329.
 Scatophaga stercoraria, habits, (30) 554.
 Scatopsidae, notes, (35) 465.
 Scelio—
 n.spp., descriptions, (29) 562.
 semisanguineus n.sp., description, (31) 554.
 Scenery preservation in New Zealand, (26) 542.
 Schardinger's enzym, studies, (26) 310.
 Schedius kuvanae, notes, (27) 455.

- Schenkia tenthredinarum n.sp., description, (34) 456.
 Schinopsis spp., studies, (36) 745.
 Schistocephalus dimorphus, description, (26) 561.
 Schistocerca—
 americana, control, (39) 863.
 americana on sugar cane, (40) 57.
 capallens, destruction, (27) 357.
 pallens, bacterial epizootic of, (26) 247.
 paranensis in Trinidad, (35) 463.
 paranensis, notes, (28) 753; (34) 854.
 paranensis, parasite of, (29) 354.
 peregrina, control in Algeria, (36) 356; (37) 461.
 tartarica taken at sea, (40) 649.
 venusta, remedies, (36) 55.
 Schistoceros hamatus, *see* Apple twig borer.
 Schistodepressaria nervosa, notes, (29) 759.
 Schistosoma japonicum, cercaria of, (40) 554.
 Schizanthus anthracnose, studies, (26) 56.
 Schizaspis lobata, parasite of, (39) 566.
 Schizocerophaga leiby n.g. and n.sp., description, (36) 554.
 Schizomycetes, nomenclature and classification, (39) 124.
 Schizoneura—*see also* Eriosoma.
 americana, studies, (34) 161.
 corni, notes, (37) 258.
 rileyi, notes, (27) 658.
 spp. in Colorado, (33) 857.
 spp., notes, (27) 555; (30) 850.
 Schizonotus sieboldii, biology, (40) 649.
 Schizophyllum—
 alneum on sugar cane, (40) 157.
 commune—
 fruit bodies of, vitality, (30) 350.
 notes, (26) 144; (28) 551; (37) 553; (38) 51.
 relation to apple collar rot, (34) 157.
 sp., notes, (26) 57.
 Schizosaccharomyces pombe, symbiosis by, (29) 714.
 Schizotetranychus latitarsus n.sp., description, (38) 63.
 Schizotrypanum—
 cruzi, notes, (34) 580.
 cruzi, occurrence in Bahia, (26) 755.
 validity as a genus, (26) 180.
 Schizura—
 concinna, *see* Apple caterpillar, red-humped.
 ipomeae in Louisiana, (37) 564.
 Schlechtendalia chinensis, life history, (26) 60, 655.
 Schloesing, J. J. T., biographical sketch, (40) 800.
 Schmidtia—
 pappophoroides, analyses and digestibility, (27) 871.
 spp., analyses and digestibility, (32) 167.
 Schoenobinae, North American, notes, (37) 564.
 Schoenobius—
 bipunctifer, notes, (33) 856; (35) 58, 659; (38) 257.
 incertellus, studies, (40) 167.
 School—
 and home gardening, (39) 396, 497; (40) 493, 898.
 and home gardening—
 course for Philippines, (40) 898.
 in San Francisco, (40) 294.
 boys for farm work, (38) 599; (39) 597, 693.
 building, community, at Wheaton, Minnesota, (37) 793.
 buildings, plans and specifications, (30) 390.
 children—
 breakfasts for, (31) 557.
 examination, (29) 297.
 feeding, (26) 763; (27) 269, 270; (28) 664; (29) 464, 465; (31) 261, 463, 494; (32) 358; (35) 471.
 feeding in Philadelphia, (30) 167.
 feeding, necessity for supervision of, (33) 261.
 feeding, treatise, (29) 162; (33) 864.
 food charts for, (31) 557.
 in Kentucky, farm work by, (38) 193.
 in Munich, nourishment, (27) 65.
 lunches for, (27) 665.
 malnutrition in, (29) 465.
 medical inspection, (27) 665.
 medical inspection and nutrition of, (32) 458.
 nutrition of, (34) 561.
 nutritional index for, (32) 256.
 of Antwerp, nutrition coefficient, (29) 364.
 out-of-school work, (38) 192.

School—Continued.

- children—continued.
 - public feeding, (33) 364.
 - weight and stature of, (36) 264.
 - cottage and gardens, model, (28) 491.
 - credit for—
 - boys' and girls' club work and extension activities, (36) 293.
 - home practice in agriculture, (35) 694.
 - out-of-school work, (33) 95, 195, 597, 799, 897.
 - curriculum, change of stress in, (36) 393.
 - demonstration fields, notes, (31) 793.
 - dietician, training, (27) 270; (32) 458.
 - districts, consolidation, (20) 597.
 - districts, rural, social surveys of (32) 289.
 - exhibits—
 - and contests, outlines for, (34) 493.
 - preparation, (32) 596.
 - suggestions for, (32) 597.
 - fair exhibits, receptacles for, (40) 96.
 - fairs, county, in Virginia, (27) 396; (29) 599.
 - fairs in Canada, (35) 594; (36) 897; (38) 795.
 - farms—
 - in New York City, (31) 297.
 - laying out and planting, (32) 692.
 - management, (33) 195.
 - organization, (36) 896.
 - use of, (35) 795.
 - flower gardens in India, (36) 395.
 - for colonial science in Germany, (27) 395.
 - Garden Association of America, (27) 195; (29) 296; (31) 598; (33) 599; (35) 199.
 - garden—
 - clubs, (39) 397.
 - for women at Glynde, Sussex, (35) 643.
 - movement, practical aid to, (27) 298.
 - Woodlawn, description, (31) 393.
 - gardening—*see also* Gardening.
 - as factor in education, (28) 598, 599; (36) 94.
 - at University of Utah, (26) 193.
 - bibliography, (29) 296.
 - in Germany, (29) 598.
 - Hawaii, (26) 296.
 - Ireland, (36) 292.
 - Los Angeles, (40) 197.
 - Philippines, (34) 795; (36) 292.
 - Trenton, New Jersey, (34) 899.
 - manual and bibliography, (31) 395.
 - notes, (38) 193.
 - review, (38) 297.
 - survival of, (31) 97.
 - textbook, (30) 496, 598.
 - treatise, (40) 296.
- gardens—
- bibliography, (32) 839.
 - care during summer vacation, (34) 93.
 - discussion, (29) 399.
 - financial gains from, (32) 692.
 - formation, (26) 597.
 - guide, (29) 598.
 - in America, (31) 493.
 - California, (27) 396.
 - Canada, (32) 896; (35) 594, 695; (36) 395; (37) 93, 293; (38) 795.
 - Ceylon, (26) 598.
 - Cleveland, (29) 898.
 - Denmark, (29) 495; (35) 194; (37) 793.
 - Idaho, (30) 898.
 - Ireland, (38) 898.
 - Los Angeles, (28) 491.
 - Memphis, Tennessee, (29) 494.
 - Nebraska, (38) 93.
 - Nova Scotia, (32) 794; (36) 193.
 - Ontario, (28) 491; (32) 692.
 - Philippines, (33) 595, 799.
 - Portland, Oregon, (32) 492, 899.
 - Quebec, (32) 794; (36) 793.
 - Saginaw, Michigan, (31) 195.
 - St. Paul, Minnesota, (31) 597.
 - Scotland, (31) 495.
 - Worcester, Massachusetts, (27) 396.
- Indian, in eastern Oklahoma, (32) 899.
- model, at Paris exposition, (29) 494.
- notes, (26) 795; (27) 898; (28) 91, 193, 394, 795, 799; (30) 394, 645; (31) 394, 494, 499, 693; (32) 289, 492, 495, 693; (33) 95, 296, 396, 598, 599, 897; (34) 795; (35) 797; (36) 395, 594, 692; (37) 95, 395, 598, 795.
- of the future, (35) 199.
- planning, (32) 596; (37) 295, 296.

School—Continued.

- gardens—continued.
 - potentiality, (27) 596.
 - preparation and management, (29) 495.
 - relation to classroom work, (34) 92.
 - relation to home gardens, (35) 199.
 - rôle in education, (27) 298.
 - suggestions to teachers, (32) 493.
 - survival of, (31) 195.
 - teachers' training school, (38) 297.
 - textbook, (29) 792; (35) 594; (36) 693; (37) 295; (39) 498.
 - value in botany course, (38) 795.
 - grounds—
 - beautifying, (28) 193, 694.
 - improvement, (29) 598; (30) 645; (33) 599.
 - planning and adorning, (31) 396.
 - planting of trees on, (28) 897.
 - Harlem (Ill.) Consolidated, notes, (31) 597.
 - hygiene, papers on, (32) 457.
 - hygiene, treatise, (30) 790.
 - inspectors and rural science, (37) 892.
 - kitchen textbook, (40) 899.
 - laboratories, agricultural collections for, (38) 899.
 - life, effect on nutrition and health, (31) 557.
 - lunch rooms, administration and equipment, (28) 863.
 - lunches—
 - as home economics project in Chicago, (38) 196.
 - bibliography, (38) 167.
 - in Gary, Indiana, (31) 360.
 - London, (33) 261.
 - Manila, (31) 166.
 - New York City, (33) 261.
 - Philadelphia, (31) 660.
 - Trieste, (28) 566.
 - Vienna, (32) 857.
 - notes, (29) 267; (32) 358, 458, 692.
 - plans for serving, (38) 599.
 - preparation, (34) 861; (36) 562, 598; (37) 64, 796.
 - preparation and serving, (29) 464, 465.
 - suggestions for, (34) 257, 661; (35) 861.
- restaurants, notes, (32) 457.
- rooms, humidification, (37) 807.
- sanitation, notes, (30) 462.
- sanitation, paper on, (29) 465.
- Schools—
- agricultural, *see* Agricultural schools.
 - agriculture in, (38) 93.
 - as community centers, (37) 593, 793.
 - as social centers, (31) 297.
 - Babcock test in, (26) 393.
 - barrio, in Philippines, (35) 796.
 - beautifying, (26) 493.
 - common, scientific farming in, (30) 92.
 - continuation—
 - cooking lessons in, (33) 792.
 - horticulture in, (28) 795.
 - in Scotland, (27) 195.
 - notes, (31) 599.
 - Corn Day annual for, (31) 298.
 - correlation with home needs, (29) 362.
 - county training, in Alabama, (36) 94.
 - diet and hygiene in, treatise, (29) 363.
 - diet, cooking, and hygiene in, (31) 261.
 - elementary—
 - agricultural course for, (26) 392; (27) 897.
 - agriculture in, (26) 191, 296; (28) 297, 298, 691; (29) 91, 99, 394; (32) 290, 596, 795; (33) 696; (34) 395, 794, 899; (35) 896; (37) 194, 295.
 - gardening in, (26) 597.
 - home economics in, (33) 696; (34) 395; (36) 598.
 - manual training in, (29) 297.
 - nature study in, (29) 394; (31) 194; (33) 298, 790; (34) 794.
 - relation to rural problems, (33) 896.
 - rural, home economics for, (38) 94.
 - standardization in Ohio, (33) 789.
 - entomological collection for, (29) 395.
 - erosion model for, (27) 797.
 - extension, for teachers, (27) 195; (32) 492.
 - farm crop exhibit for, (29) 93.
 - farm life, in North Carolina, (32) 895; (36) 596.
 - folk high, in Denmark, (32) 492, 493.
 - forestry arithmetic for, (33) 495.

Schools—Continued.

- forestry in, (31) 792.
- from the farmer's standpoint, (26) 299.
- garden work in, (26) 95.
- graded, agriculture in, (31) 298; (33) 597.
- graded, nature study in, (36) 395.
- high, agricultural—
 - clubs in, (30) 794; (31) 96.
 - courses for, (28) 898; (29) 91; (30) 196, 393, 496, 597.
 - engineering in, (35) 94.
 - extension in, (29) 298; (32) 496; (33) 799; (35) 92; (36) 293.
- high—
 - agriculture in, (26) 190, 191, 192, 390, 697; (27) 296, 297, 491, 596, 896; (28) 391; (29) 494, 597, 897; (30) 98, 793; (31) 297, 298, 493, 692, 896; (32) 492, 595, 690; (33) 94, 195, 595, 798, 897; (34) 395, 692, 793, 897, 898; (36) 495, 594, 691, 692, 895; (37) 194, 494.
 - animal husbandry in, (34) 195.
 - applied botany in, (28) 298.
 - biological course for, (28) 91.
 - conference in Illinois, (37) 93.
 - cooking in, (35) 897.
 - cooperation with colleges of agriculture, (26) 296.
 - entomology in, (31) 395.
 - farm mechanics in, (28) 91.
 - fruit growing in, (33) 398.
 - gardening course for, (29) 193.
 - general science course for, (30) 898.
 - home economics in, (29) 792; (31) 297; (32) 494; (33) 94; (34) 395; (35) 898; (36) 594.
 - in Denmark, (35) 695.
 - laboratory exercises for, (33) 494.
 - lunches in, (32) 458.
 - moor culture in, (33) 791.
 - of Minnesota, agriculture in, (26) 391.
 - out-of-school work in, (34) 93.
 - poultry instruction in, (36) 794.
 - rural relations, (39) 298.
 - science and agriculture in, (30) 897.
 - state aid in Arizona, (28) 799.
 - state aid in Nebraska, (29) 99.
 - supervised farm work in, (32) 492.
- home economics instruction in, (28) 495.
- home project work for, (36) 896.
- hotbeds for, (27) 491.
- housekeeping, in Norway, (29) 597.
- itinerant dairy, of Ardeche, (28) 297.
- Knapp Agricultural Day program for, (32) 496.
- nature study collections for, (30) 696.
- negro, agriculture in, (38) 92.
- negro rural, practical training in, (32) 289.
- nonflush chemical closet for, (38) 84.
- normal, agriculture in, (26) 497.
- normal, state aid in Arizona, (28) 799.
- normal, training of rural teachers in, (32) 690.
- of California, cooperation with College of Agriculture, (26) 192.
- Illinois, Winnebago County, (27) 394; (29) 91.
- Indiana, Hamilton County, (29) 394.
- Minnesota, regulations and laws concerning, (27) 194.
- Ontario, agriculture in, (28) 391.
- tomorrow, (35) 795.
- patrons' meetings, (26) 394.
- people's high, in Denmark, (30) 93.
- public—
 - agriculture in, (26) 299, 898; (27) 94; (31) 494, 896; (32) 392, 493, 596, 897; (33) 597, 791, 798, 897; (37) 192, 494, 893.
 - arbor and good roads days in, (30) 696.
 - cooperation with colleges of agriculture, (26) 296.
 - entomology in, (35) 897; (37) 459.
 - forestry in, (30) 394.
 - gardening in, (31) 896.
 - home economics in, (32) 897; (33) 792; (37) 494.
 - in Alaska, (37) 393.
 - in Philippines, (36) 292.
 - industrial education in, (28) 15; (32) 595.
 - nature study in, (27) 694; (31) 493; (32) 493.
 - relation to community life, (27) 898.
 - specimen or supply cabinets in, (26) 596.
 - vocational courses in, (27) 694.

Schools—Continued.

- rural—
 - agricultural booklets for, (33) 397.
 - agricultural course for, (29) 192; (30) 393, 394.
 - agricultural extension work in, (29) 899.
 - agriculture in, (26) 191, 295, 596, 697; (27) 598; (28) 90, 193, 492, 693, 897; (29) 92, 695; (30) 795; (31) 298; (32) 691, 897; (33) 95, 597; (34) 92, 693; (35) 395; (36) 596.
 - and country life, treatise, (28) 692.
 - art and hand work in, (30) 462.
 - as social centers, (29) 91, 465.
 - betterment, (30) 298; (32) 689.
 - bibliography, (32) 389.
 - conveniences for, (37) 696.
 - corn lessons for, (39) 299.
 - correlation of industrial and academic subjects, (27) 393.
 - cotton lessons for, (34) 293.
 - defects, (29) 91.
 - exercises with plants and animals, (34) 292.
 - fairs in Canada, (38) 795.
 - farm handicraft for, (37) 699.
 - for city boys, (27) 896.
 - handbook, (29) 494.
- rural high—
 - address on, (31) 498.
 - as community centers, (31) 493.
 - community spirit in, (33) 194.
 - community work in, (28) 692.
 - in New Hampshire, (31) 692.
 - possibilities, (32) 689.
 - readjustment, (28) 391.
- rural—
 - home economics in, (28) 694; (32) 897.
 - hot lunches in, (29) 465; (30) 462.
 - housekeeping and sanitation in, (31) 791.
 - hygiene of, (32) 190.
 - improvement, (28) 90; (29) 91; (30) 93, 496, 694; (32) 793.
 - in Denmark, (32) 794.
 - Denmark, treatise, (34) 196.
 - Kansas, (33) 694.
 - Minnesota, (34) 195.
 - Ontario, (32) 896; (34) 196.
 - South Carolina, (28) 391.
 - Wisconsin, (28) 390; (32) 691; (36) 592.
 - industrial club work in, (31) 297.
 - influence, (27) 194.
 - insect specimens, etc., for, (31) 792.
 - lunches for, (32) 692.
 - manual training in, (34) 395; (36) 96.
 - material supplied to, (33) 792.
 - nature study exhibits by, (31) 899.
 - nature study in, (31) 193; (33) 95.
 - needs of, (36) 194.
 - notes, (27) 897.
 - organization and management, (34) 292.
 - papers on, (27) 793; (37) 892; (40) 895.
 - pork production lessons for, (39) 298.
 - poultry lessons for, (36) 597.
 - redirection, (28) 792.
 - relation to agricultural teaching, (31) 194.
 - relation to social survey, (40) 896.
 - relation to the home and farm, (32) 492.
 - sanitation, (36) 892.
 - soil study in, (32) 494.
 - studies, (28) 297.
 - treatise, (30) 392; (32) 391.
- secondary—
 - agriculture in, (26) 191, 192, 498, 898; (27) 490; (28) 693; (29) 99, 399; (30) 99; (31) 96; (32) 897; (33) 798; (34) 491, 693, 793; (36) 691; (37) 392, 395.
 - curricula of, (33) 896.
 - domestic science in, (26) 394.
 - extension work in, (31) 799.
 - farm mechanics in, (26) 393.
 - judging of horses in, (36) 597.
 - nature study in, (31) 395.
 - poultry husbandry in, (37) 394.
 - sewage disposal for, (37) 884.
 - spring laboratory methods for, (27) 196.
 - state normal, and agricultural colleges, relation, (31) 896.
 - use of land in connection with agricultural teaching, (32) 896.
 - ventilation, (30) 790.
 - vocational. *see* Vocational schools.
 - weed collections for, (31) 599.

Schools—Continued.

- window gardening for, (29) 898.
winter, (36) 498.
winter, for farmers, (36) 396.
- Schreckensteina festaliella in Wisconsin (38) 155.
- Schumann rays, effect on protoplasm, (33) 224.
- Sciaphobus squalidus, studies, (31) 853.
- Sciara—
coprophila injurious to potted plants, (36) 460.
revision, (40) 858.
sciophila, notes, (28) 858.
sp., dipterous parasite of, (34) 553.
spp., notes, (27) 657; (28) 156.
trifolii n.sp., description, (40) 168.
tritici injurious to Primula seedlings, (37) 762.
- Sciama frontalis n.sp., description, (37) 763.
- Science—
adjustment to practice, (36) 2.
and agriculture in high schools, (30) 897.
and common sense, antagonism between, (34) 401.
and industry institute in Australia, (38) 796.
courses, elementary, (32) 690.
elementary, treatise, (26) 296.
first year, laboratory manual, (28) 298.
for beginners, textbook, (39) 597.
in secondary education, (26) 296.
organization for research, (39) 603.
yearbook, (34) 494.
- Scientific—
activity as a national asset, (39) 101.
papers, essentials of, (30) 403.
Research Association in Great Britain, (40) 500.
Society of Brünn, proceedings, (28) 530.
- Seilla rigidifolia fiber, tests, (31) 526.
- Scions—
and stocks, antagonism of, (31) 740.
as affected by stock, (27) 540; (28) 541.
transmission of variegation to stocks, (26) 529.
- Sciophites obscurus, notes, (32) 651.
- Sciopteron regale, notes, (30) 252.
- Scirpophaga intacta, notes, (34) 758.
- Scirpophaga sericea, notes, (35) 58.
- Scirpus—
americanus, analyses, (29) 270.
lacustris as a litter for cows, (35) 175.
lacustris, fertilizing value, (38) 520.
sylvaticus, nematodes affecting, (30) 746.
- Scirrhia bambusae n.sp., description, (36) 251.
- Scirtothrips citri, studies, (38) 763.
- Sciurus—
griseus, destruction of conifer seed by, (31) 154.
hudsonicus richardsoni, host of spotted fever tick, (26) 64.
- Scleroderma—
duarteum n.sp., description, (31) 62.
immigrans n.sp., description, (40) 266.
vulgare n.sp., description, (31) 127.
- Scleroderris livida, notes, (26) 852.
- Sclerophylls, transpiration in, (27) 522.
- Scleroplea aurantiorum n.sp., description, (27) 50.
- Scleropycnis abietina—
n.g. and n.sp., description, (27) 46.
notes, (28) 750.
- Scleropycnium aureum n.g. and n.sp., description, (30) 248.
- Sclerosis, diffuse, in horses in India, (38) 287.
- Sclerospora—
graminicola, oospore parasite of, (31) 641.
graminicola, studies, (31) 51.
macrospora in France, (34) 243.
macrospora, notes, (28) 647; (35) 49, 150.
macrospora on maize, (39) 753.
maydis, description and treatment, (31) 51.
maydis quarantine in United States, (36) 245.
sp., notes, (30) 845.
- Sclerostome—
parasites of horses, (35) 785; (37) 280.
parasites of horses in England, (36) 280.
- Sclerostomes as cause of debility, (39) 892.
- Sclerostomum—
bidentatum, life history, (29) 783.
bidentatum, studies, (37) 82.
equinum, dissemination by flies, (30) 659.
spp., affecting mules, (28) 82.
spp., anatomy and biology, (28) 887.
spp., embryology, (30) 555.

Sclerotinia—

- ciborioides or S. trifoliorum, description, (36) 47.
- cinerea—
and S. fructigena, relationship, (29) 848.
apothecial stage, (32) 49.
as affected by cold, (34) 538.
enzymes of, (40) 745.
in Minnesota, (34) 445.
in northern Vermont, (35) 849.
investigations, (35) 249.
notes, (28) 244, 443; (35) 351; (38) 550; (39) 652.
studies, (31) 749, 843.
temperature relations, (36) 649.
diseases, studies, (40) 49.
fagopyri n.sp., description, (38) 648.
- fructigena—
and S. cinerea, comparison, (30) 352.
notes, (32) 241; (34) 241; (35) 248; (36) 348, 750; (37) 457.
studies, (29) 848.
transmission by tree crickets, (34) 653.
treatment, (32) 148.
- fuckellana—
and S. libertiana, relationship, (28) 848.
notes, (26) 852; (28) 847; (31) 646.
relation to Botrytis, (39) 250.
treatment, (30) 651.
- geranii n.sp., description, (40) 249.
- injurious to plants, (26) 343.
- libertiana—
description, (29) 450.
description and treatment, (29) 846.
notes, (26) 649; (28) 242; (29) 243, 650, 751, 753; (31) 747; (37) 550, 552, 749; (38) 645.
on celery in storage, (31) 447.
collards, (37) 48.
parsley, (35) 847.
peonies, (33) 56.
pepper, (39) 455.
snap beans, (36) 647.
sweet peas, (32) 446.
relation to damping-off of truck crops, (35) 844.
studies, (26) 448, 647; (34) 749; (36) 251, 751; (37) 155.
- mali n.sp., description, (36) 148.
- matthiolae n.sp., description, (38) 850.
- matthiolae n.sp., studies, (39) 850.
- n.sp., description, (29) 548.
- opuntiarum, notes, (34) 543.
- panacis n.sp., description, (27) 247.
- panacis, notes, (34) 244.
- perplexa n.sp., description, (28) 346.
- sclerotium—
notes, (27) 446; (31) 539; (40) 847.
studies, (34) 443; (37) 350.
treatment, (32) 239.
- sp., notes, (30) 159.
- sp., on alfalfa, (34) 643.
- sp., relation to potato stem lesions, (39) 649.
- spp., fundamental nutrition, (40) 745.
- spp., notes, (29) 243, 549, 646.
- spp. on ginseng, (34) 350.
- trifoliorum—
description and treatment, (39) 754.
forms and behavior, (36) 246.
in Bohemia, (35) 650.
investigations, (38) 850.
notes, (28) 52, 150, 545, 847; (29) 150, 446, 447, 845; (32) 543; (36) 748; (39) 52.
relation to clover sickness, (34) 541; (36) 348.
- Sclerotium—
associated with Rhizoctonia on potatoes, (31) 845.
- bataticola—
description, (32) 51.
n.sp., description, (30) 150.
on peppers, (38) 250.
studies, (34) 156; (39) 854; (40) 347.
- cepvorum, studies, (35) 547.
- disease of coffee, (40) 252.
- omnivorum n.sp., description, (33) 647.
- on lawn grasses, (39) 753.
- oryzae, notes, (31) 641; (34) 49; (36) 448.
- oryzae, studies, (30) 244, 540, 845.

Sclerotium—Continued.

- rhizodes, notes, (31) 641.
- rhizodes, studies, (26) 646; (27) 150.
- rolfsii—
 - description and treatment, (30) 50.
 - notes, (29) 243; (35) 750; (39) 56, 852.
 - on citrus seedlings, (39) 56.
 - fig, (39) 757.
 - grapefruit, (36) 452.
 - sugar cane, (38) 851; (40) 157.
 - sweet potatoes, (36) 451.
 - wheat, (39) 852.
 - resistance of peanuts to, (38) 851.
 - studies, (32) 546; (35) 754; (37) 49, 247, 250.
- (*Sclerotinia*) *opuntiarum*, notes, (34) 543.
- sp. on peanuts, (37) 452.
- tulipae, studies, (39) 653.
- tuliparum, notes, (26) 851; (27) 851; (35) 51.

Scolecotrichia coccicola, description, (33) 459.

Scolecotrichum—

- caricae, notes, (29) 243.
- graminis, hosts of, (37) 839.
- heveae n. sp., notes, (37) 253.
- sp. on Hevea, (39) 653.

Scolecosporium coryli n.sp., description, (37) 748.

Scolia—

- manilae in Hawaii, (40) 854.
- spp., importation into Mauritius, (39) 869.
- Scoliinae of North America, (28) 858.
- Scolopendrella immaculata*, notes, (28) 854.

Scolothrips sexmaculatus—

- notes, (28) 457.
- parasitic on red spider, (32) 157.

Scolytid beetles—

- characteristics, (30) 554.
- of Oregon, (37) 666.

Scolytidae—

- feeding habits, (26) 151.
- identification, (29) 859.
- key, (39) 65.
- new species, descriptions, (26) 253.
- notes, (26) 759.

Scolytoid beetles, studies, (32) 758.

Scolytoidea—

- monograph, (32) 658, 758.
- studies, (32) 658.

Scolytus—

- amygdali, notes, (36) 754.
- multistriatus, notes, (27) 255; (28) 57.
- multistriatus, studies, (27) 658.
- quadrifidus, notes, (26) 856; (28) 158; (30) 655, 656; (32) 550; (33) 58, 252; (34) 158; (40) 259.
- quadrifidus, remedies, (26) 560; (29) 457.
- rugulosus, see Shot-hole borer.
- spp., notes, (30) 455; (36) 754.
- unispinosus, studies, (39) 65.

Scoop wheel, construction and operation, (27) 687.

Scopaeothrips unicolor n. g. and n.sp., description, (27) 454.

Scopelosoma tristigmata, notes, (32) 556.

Score card—

- as factor in judging dairy cows, (29) 577.
- dairy, relation to milk quality, (33) 78.
- for apples, (28) 492.
- bread, (30) 859.
- cheese, (26) 779.
- corn, (26) 332; (28) 669.
- creameries and cheese factories, (32) 889.
- dairies, (30) 679.
- dairy and beef cattle, (26) 493.
- dairy farms, (28) 775; (33) 576.
- farms, (26) 297.
- food inspection, (29) 661.
- fruits, (29) 40; (30) 41; (32) 141.
- Kafir corn, (31) 832.
- milk stores, (29) 776.
- potato growing contests, (28) 899.
- potatoes, (28) 43.
- restaurants, (28) 661.
- use in milk inspection, (26) 274.

Scorias capitata n.sp., description, (38) 648.

Scorpion venom, toxicity, (39) 886.

Scorpions, summary of information, (39) 768.

Scorzonera—

- hispanica, accustoming silkworms to, (27) 456.
- hispanica, betains in, (27) 203.
- lacinata, appearance in South Australia, (38) 141.

Scotia saturniae, parasitic on gipsy moth, (31) 652.

Scottish—

Agricultural Organization Society, report, (31) 788.

Station for Testing and Registration of Agricultural Plants, (40) 700.

Scottsbluff Experiment Farm, report, (40) 493.

Scours in calves, treatment, (26) 183.

Scovell, M. A., biographical sketch, (27) 401; (34) 694.

Scrapie in sheep, (30) 783; (32) 276.

Scrapie, notes, (34) 382.

Screen wire cloth, durability, (39) 162.

Screenings—

- analyses, (28) 464; (29) 271, 367, 467; (30) 371; (31) 73, 366, 663; (32) 169; (33) 71, 870; (34) 169, 371, 663, 759; (36) 65, 167; (37) 471; (39) 370.

analyses and digestibility, (29) 366.

as adulterant in feeds, (30) 466.

feeding value, (29) 866; (34) 663.

for poultry, (33) 763.

for sheep, (32) 770.

ground, analyses, (34) 665; (38) 67.

use in mixed feeds, (32) 770.

Screens, use in houses, (31) 787.

Screws, wood, transverse strength of, (30) 889.

Screw-worm—

fly in Hawaii, (40) 263.

fly in Panama, (39) 661.

fly, new generic name, (34) 756.

life history and remedies, (38) 160.

notes, (26) 781; (29) 454.

relation to myiasis aurium, (31) 777.

Scrubber for ammonia distillation, (40) 806.

Scudderia furcata—

notes, (33) 58.

studies, (33) 451.

Scurfy—

bark louse, see Scurfy scale.

scale, notes, (26) 753; (28) 156, 353; (29) 251; (31) 60; (34) 752; (35) 256.

scale on Norway maple, (33) 858.

Scurfy—

experimental, in guinea pigs, (36) 62, 363.

in guinea pigs, etiology, (27) 567.

in Zhob, Baluchistan, (36) 563.

infantile, relation to milk, (30) 861.

infantile, studies, (27) 568; (40) 363, 566.

infantile, treatment, (40) 869.

metabolism of, in an adult, (28) 868.

notes, (40) 565.

relation to diet, (27) 567; (30) 367, 764; (31) 761; (38) 268, 568.

review of investigations, (36) 363.

similarity to zeism, (31) 464.

sprouted grains for, (40) 565.

studies, (35) 666; (39) 365, 589, 770, 771; (40) 70, 172, 272, 273, 363, 364, 464, 566, 763, 868, 869.

summary and digest of data, (36) 161.

Scutellista—

cyanea, notes, (29) 359.

cyanea, parasitic on black scale, (26) 555.

gigantea n.sp., description, (38) 460.

Scutellum coffeanum, notes, (38) 51.

Scutigerella immaculata, notes, (27) 655.

Scydmaenus chevalieri n.sp., notes, (30) 856.

Scymnus—

bipunctatus in Philippines, (33) 562.

marginicollis, destructive to purple scale, (26) 757.

notescens, life history, (29) 253.

sordidus, destructive to citrus plant lice, (26) 755.

sp., life history, (33) 562.

spp., notes, (26) 149; (27) 656; (29) 261.

spp., parasitic on red spider, (32) 157.

spp., studies, (29) 355.

Scyphophorus acupunctatus, studies, (38) 62.

Sea—

breeze on Long Island, (38) 209.

eel, serum of, (40) 880.

grass, analyses, (26) 324.

lettuce, analyses, (37) 814.

mussels, food value, (26) 356.

mussels, utilization as food, (31) 356.

salt as fertilizer for beets, (26) 43.

urchin, canned, analyses, (36) 63.

Sea—Continued.

- water—
 - as source of potash, (34) 327.
 - bittern, potash from, (39) 328.
 - effect on concrete, (29) 686.
 - effect on nitrification of sewage, (26) 317.
 - use for irrigation, (33) 392.
- winds, effect on male inflorescences of pine, (38) 331.
- Seals of Laysan Island, (27) 549.
- Seaside planting, treatise, (40) 447.
- Seasonal correlations in the Far East, (35) 115; (37) 807.
- Seasonings, analyses, (30) 257.
- Seasonings, examination, (31) 656.
- Seasons—
 - forecasting, (37) 619.
 - growing, length of, (36) 418.
 - limits of, (34) 14.
 - of Alaska, (39) 124, 125.

Seaweed—

- analyses, (26) 324; (27) 327, 421; (35) 128, 163, 167, 327; (36) 120.
- analyses and fertilizing value, (37) 814.
- as feeding stuff, (35) 167.
- as fertilizer for potatoes, (38) 432.
- as food material, (35) 163.
- biochemistry of, (29) 566.
- burning in Norway, (29) 517.
- chemical analyses, (40) 725.
- composition and use, (26) 126.
- culture in Ireland, (33) 819.
- fertilizing value, (26) 324; (31) 517, 829; (38) 624; (40) 724.
- for packing birds, (32) 672.
- for potatoes, (33) 330.
- industry in France, (31) 517.
- mucilage, use against fruit pests, (32) 56.
- Philippine, use as food, (40) 557.
- potash from, (26) 726; (27) 724; (28) 522; (29) 128; (33) 819; (34) 26, 327.
- utilization, (34) 298.

Secale—

- cereale, chromosome numbers in, (27) 636.
- montanum, relation to cultivated rye, (32) 131.

Secchium edule—

- analyses, (31) 863.
- culture experiments, (30) 632.
- notes, (29) 461; (30) 532; (34) 835.
- Secodella n.spp., descriptions, (34) 363.
- Secretin, effect on circulating blood, (39) 285.
- Secretions, internal, treatise, (30) 380.

Sedge rusts—

- studies, (34) 744.
- taxonomy, (33) 130.

Sedges—

- of Guam, (31) 467.
- of Philippines, (33) 433.

Sedimentation glass, description, (31) 811.

Sedoheptose, notes, (37) 502.

Sedulothrips insolens in Trinidad, (40) 649.

Sedum sieboldii as affected by radium, (28) 825

Seed—

- analyses, interpretation and use, (29) 143.
- association in Sweden, (40) 823.
- bed frame, nursery, description, (35) 452.
- beds, preparation, (37) 227.
- beds, sterilization, (38) 556.
- coats, permeability, (34) 626; (38) 126.
- coats, semipermeability, (30) 132.
- collection, notes, (29) 242.
- control—
 - and plant breeding, (40) 245.
 - in Switzerland, (29) 337.
 - measures in various countries, (39) 744.
- control station—
 - at Christiania, report, (28) 315.
 - Graz, report, (28) 414.
 - Lund, report, (28) 46.
 - Rostock, (32) 833.
 - Zurich, (32) 833.
 - Danish, report, (27) 39.
- control stations—
 - in Europe, (31) 835.
 - in Finland, report, (30) 599.
 - in Norway, (30) 194.
- corn maggot, *see* *Phorbia fusciceps*.
- corn, storing under tropical conditions, (39) 738.
- demonstration tests in Alaska, (39) 125.
- determination of freshness and vitality, (26) 44.

Seed—Continued.

- drill, hand, description, (28) 736.
- drill, test, (29) 893.
- drills, adjustment, (28) 85.
- drills, tests, (27) 387; (30) 292.
- examination, (29) 740; (31) 509.
- fairs in Canada, (33) 697.
- farms in India, report, (26) 232.
- formation and parthenocarp in bananas, (31) 535.
- growers' association in Canada, (26) 839.
- harvester for clover, (39) 292.
- houses, fumigation, (29) 641.
- improvement associations in Sweden, (26) 436.
- industry in Germany, (36) 638.
- industry in New York, (34) 40.
- inspection—
 - and analyses, (35) 140.
 - in Argentina, (37) 823.
 - Arizona, (31) 155.
 - Canada, (30) 236.
 - Colorado, (39) 343.
 - Connecticut, (36) 39.
 - Denmark, (29) 433; (37) 742; (40) 832.
 - England and Wales, (40) 339, 637.
 - Germany, (28) 736.
 - Kentucky, (39) 443.
 - Maine, (26) 838; (29) 144; (31) 43; (32) 833; (34) 736; (36) 467; (37) 40; (39) 343; (40) 443.
 - Maryland, (26) 333; (36) 442; (37) 541; (39) 343; (40) 535, 831.
 - Michigan, (28) 836; (32) 635.
 - Minnesota, (32) 635; (35) 642; (37) 446; (40) 338.
 - Missouri, (38) 633.
 - Montana, (31) 633; (32) 740; (35) 835; (37) 238; (40) 443.
 - New Hampshire, (27) 536; (31) 139; (32) 635; (34) 531; (36) 739; (39) 842.
 - New Jersey, (31) 532; (34) 832; (36) 836; (37) 239, 645; (39) 842.
 - New South Wales, (40) 635.
 - New York State, (29) 40; (31) 139; (32) 741; (35) 740; (39) 541.
 - New Zealand, (37) 446.
 - North Carolina, (27) 536; (29) 144; (31) 139; (33) 836; (38) 240; (40) 338, 443.
 - North Dakota, (33) 138.
 - Pennsylvania, (34) 143; (36) 739; (39) 238.
 - Queensland, (40) 314, 415.
 - Saxony, (32) 689.
 - Vermont, (32) 741; (36) 534; (38) 441.
 - Washington, (29) 266.
 - Wisconsin, (34) 143.
 - Zurich, Switzerland, (38) 538.
- introduction, relation to phytopathological problems, (40) 343.
- law in—
 - Canada, (27) 643; (39) 744.
 - Colorado, (38) 140; (39) 238.
 - Maryland, (29) 337; (32) 740; (40) 146.
 - Massachusetts, need of, (28) 395.
 - Michigan, (28) 836.
 - New Hampshire, (27) 536; (29) 741; (31) 139; (39) 842.
 - New Jersey, (28) 339; (31) 532; (35) 835.
 - New York, (29) 40.
 - North Dakota, (30) 342.
 - Oregon, (35) 471.
 - Vermont, (32) 741.
 - Wisconsin, (32) 635; (34) 143.
 - Wyoming, (33) 138.
- law, notes, (29) 633.
- law, uniform, proposed principles, (39) 239.
- oils, digestibility, (39) 571.
- "preparator," description, (27) 235, 739.
- production—
 - detrimental conditions, (39) 841.
 - in Sweden, (39) 644.
 - in Switzerland, (40) 833.
 - in western hemlock, (38) 644.
 - physiology of, (30) 433.
- proteins, nutritive values, (39) 665, 666.
- proteins, studies, (40) 69, 563.
- red clover, (40) 627.
- reports, (38) 343, 441, 639, 743, 841; (39) 38, 138, 238, 343, 443, 644, 744; (40) 146, 245, 338, 535, 831.
- reserve material, effect on development of plants, (26) 729.

Seed—Continued.

- rooms, heating to destroy insects, (38) 241.
- selection, (31) 226, 829.
- selection—
 - and testing, (36) 638.
 - based on transparency, (30) 233.
 - new basis for, (29) 516.
 - notes, (26) 141.
- setting by cultivated plants, (27) 329.
- supply of United States, (39) 443.
- tester, rag-doll, (39) 238.
- testing, (27) 95, 142, 491, 840; (31) 43, 835; (35) 93, 140; (39) 238, 847.
- testing—
 - accuracy and uniformity of results in, (26) 200.
 - at Danish Seed Control Station, (35) 452.
 - international conference, (26) 44.
 - key, (36) 338.
 - methods, standardization, (31) 639.
 - papers on, (39) 238.
 - precipitin reaction, (28) 204; (29) 144.
- tests, (36) 541.
- tests, variations in, (40) 145.
- treatment, (26) 539; (27) 132; (39) 238, 248, 353, 354, 363, 549, 851, 853.
- treatment with bromin, (40) 443.
- weight, relation to plant characteristics, (29) 522; (31) 824.
- weight, relation to plant mortality, (31) 35.

Seeding—

- drill for nursery rows, (40) 228.
- experiments, plat competition in, (39) 830.
- fall, notes, (30) 197; (38) 95.
- machine for garden or nursery planting, (27) 191.

Seedlings—

- abnormal, notes, (30) 329; (36) 734.
- artificial nourishment, (27) 730.
- as affected by—
 - electrical discharges, (28) 326.
 - narcotics, (31) 730.
 - radium rays, (27) 630.
- damping-off, (37) 651.
- damping-off, treatment, (30) 846.
- fasciated, morphology and physiology, (27) 524.
- mounting in culture solutions, (31) 426.
- of trees and shrubs in France, (26) 642.
- phototropic responses in, (33) 29.

Seeds—

- abortive, position in pod, (40) 521.
- absorption of toxic salts by, (37) 527.
- Acacia, germination, (39) 226.
- adulteration, (35) 140; (38) 343.
- after-ripening studies, (29) 527.
- analyses, (26) 739; (27) 39, 239, 342, 815; (28) 315, 811; (29) 144; (32) 534; (35) 8.
- and fruits, treatise, (27) 729.
- and leaves, dietary relationship, (37) 264.
- apparatus for sterilizing, (26) 32.
- as affected by—
 - caffeine, (27) 330.
 - electrical discharges, (28) 326.
 - electrolytes, (33) 727; (35) 332.
 - pod position, (34) 134.
 - poisons, (29) 529.
 - Roentgen rays, (34) 334.
- asepticizing, (28) 826; (29) 433.
- awned grass, abnormal germination, (30) 633.
- bent, characteristics, (39) 533.
- bibliography, (29) 626.
- breeding and distributing by experiment stations, (26) 434.
- buried, germination, (34) 832.
- buried, vitality, (34) 732; (36) 330.
- catalase and oxidase content, (40) 222.
- chemical treatment, (29) 326.
- cleaned, (39) 238.
- cleaning, (40) 40.
- cleaning and treating, (28) 536.
- cleaning device, (39) 538.
- copper determination in, (40) 807.
- copper tests in Norrland, (40) 832.
- delayed germination of, (26) 128; (34) 30.
- determination of—
 - germination energy of, (29) 538.
 - life duration, (32) 221; (33) 128; (38) 822.
- disinfection, (26) 820; (35) 444.
- disinfection experiments, (31) 738.
- disinfection with bromin, (37) 542.

Seeds—Continued.

- dissemination by birds, (27) 549.
- distribution, (28) 46, 488; (33) 694; (36) 494; (39) 139.
- distribution by ocean currents, (38) 125.
- distribution in Canada, (28) 638.
- dormancy in, (36) 330; (39) 225.
- edible and oil-producing, in West Africa, (36) 611.
- edible, of Guam, (28) 142.
- effect—
 - of drying on germination, (27) 201.
 - of size on yield, (29) 632.
 - of soaking in water, (40) 727.
 - on size of fruit, (27) 231, 524.
- ensiled, germination, (29) 741.
- exportation from Sweden, (26) 436.
- extracting establishment in Prussia, (27) 347.
- factors affecting oil content, (32) 427.
- forest, effects of environment, (28) 543.
- fruit, preservation experiments, (26) 51.
- formation as affected by light, (29) 526.
- formation of hydrocyanic acid in, (27) 132.
- fruit, hydrocyanic acid content, (27) 11.
- fumigating, (32) 650.
- garden, disinfection and fumigation, (40) 638.
- garden, home production, (39) 444.
- garden, saving, (38) 241.
- germ plasm, modifying, (39) 30.
- germinating—
 - as affected by electricity, (28) 732.
 - carbon dioxide separation in, (28) 728.
 - electrical response, (38) 822.
 - energy transformations in, (36) 525.
 - enzymatic peptolysis in, (32) 130.
 - hydrocyanic acid in, (35) 332.
 - pentosan content, (29) 525.
 - power of (31) 624.
 - respiration, (27) 729.
 - response to temperatures, (40) 222.
 - value, electrical tests, (36) 732.
- germination, (36) 338.
- germination and purity tests, (27) 39, 643, 840, 841; (28) 434; (29) 741; (30) 141; (32) 231.
- germination as affected by—
 - acids, (29) 26; (30) 521.
 - carbon bisulphid, (27) 633.
 - carbon dioxide, (31) 521; (32) 328.
 - chlorids, (35) 423.
 - color, (32) 144.
 - depth of planting, (36) 437.
 - different substances, (29) 421.
 - electricity, (27), 231.
 - electrolyte solutions, (29) 218.
 - fertilizers, (29) 327.
 - frost and light, (35) 632.
 - green manure, (28) 816; (35) 24, 529.
 - hot water and mechanical treatment, (29) 740.
 - hydrogen peroxid, (29) 844.
 - light, (26) 820, 821; (28) 826; (29) 525, 526, 836; (30) 522, 531; (31) 222; (35) 222, 523; (38) 127.
 - manganese sulphate, (30) 332.
 - metallic compounds, (29) 528.
 - metallic salts, (39) 526.
 - mucilage, (27) 427.
 - naphthalin, (33) 523.
 - nitrogenous products, (33) 825.
 - Orwood, (28) 536.
 - pressure, (35) 332.
 - radioactivity, (29) 326; (30) 131.
 - radium, (31) 821; (34) 626, 730.
 - Roentgen rays, (28) 128; (35) 436.
 - salt, (32) 223.
 - salt concentration, (39) 732.
 - sulphuric acid, (27) 524; (29) 628.
 - superphosphate, (31) 729.
 - temperature, (26) 200, 821; (31) 222; (35) 222.
 - thorium X, (29) 131.
 - various solutions, (27) 330.
 - volatile conifer products, (32) 618.
 - warm water, (36) 430.
 - weather, (38) 15.
- germination—
 - experiments, (38) 441.
 - in culture solutions, (31) 426.
 - electrolytes, (37) 431.
 - electrolytic solutions, (31) 427.
 - heated soils, (26) 640; (35) 722.

Seeds—Continued.

- germination—continued.
 - in light, (31) 222, 323.
 - oxygenated water, (36) 29.
 - partially sterilized soils, (30) 225.
 - salt solutions, (29) 218; (38) 429.
 - physiology, (33) 29.
 - promoting, (28) 395.
 - role of oxygen in, (30) 629.
 - studies, (26) 531; (27) 220; (29) 828; (30) 30; (32) 329; (33) 310, 825, 826; (39) 526.
 - tests, (26) 44, 200; (28) 327, 339, 639; (29) 143; (30) 235, 837; (31) 43; (37) 26.
- germination tests—
 - in natural mediums, (31) 633.
 - suggestions for, (29) 740.
 - tolerance table, (37) 541.
 - v. electrical response in, (35) 523.
 - variable results of, (30) 141.
- germinative ability and vegetative force, (29) 740.
- grain, as affected by environment, (40) 233.
- graminaceous, rust in, (32) 642.
- growing and storing, (31) 139.
- growing on the farm, (35) 140.
- hard, germination, (31) 228; (34) 225.
- hard, treatment, (28) 434.
- heteromorphic, germination, (28) 631.
- histological characteristics, (27) 112.
- home-grown, (40) 340.
- hydrolytic changes in, (32) 626.
- identification, biological method, (32) 42.
- immature, formation of starch in, (33) 523.
- impermeable, viability, (35) 740.
- importation law, (28) 536.
- imported, control and disinfection, (27) 656.
- imports, (26) 128, 629; (27) 329, 637; (28) 332; (29) 424; (30) 730; (31) 327; (32) 628; (33) 827; (34) 336, 527; (35) 29; (37) 819; (38) 629; (39) 226, 333, 632; (40) 327.
- improved, distribution in Kansas, (26) 131.
- improvement, (28) 536.
- improvement in Canada, (28) 739; (37) 141, 831.
- improvement in Sweden, (27) 437.
- impurities of, treatise, (31) 835.
- in relation to number of ovules, (31) 523.
- influence of environmental conditions, (40) 727.
- injuries by disinfectants, (32) 647.
- insects affecting, (26) 453.
- large v. small in plant production, (31) 634.
- lead arsenate in, (27) 243.
- legume, investigations, (40) 39.
- leguminous, as affected by heat, (33) 629.
- leguminous, ash analyses, (29) 861.
- lessons on, (31) 394.
- longevity, (32) 634.
- longevity in relation to temperature, (37) 725.
- longevity tests, (40) 339.
- loss of viability in storage, (37) 725.
- maturation, (36) 731, 824.
- measuring expansive force of, (35) 28.
- medicinal, notes, (30) 145.
- methods of analysis, (31) 806; (32) 741.
- moisture intake at various temperatures, (35) 222.
- nitrogen distribution in, determination, (40) 502.
- of Bombay, germination tests, (27) 39.
- cultivated plants and their identification, (38) 240.
- fleshy fruits, germination, (38) 224.
- Japanese Brassica, (40) 626.
- Leguminosae, (31) 523.
- trees and shrubs in France, (26) 642.
- oil, *see* Oil seeds.
- packeted vegetable, germination tests, (28) 143.
- parasites in, (39) 225.
- parasitic infection of, (35) 244.
- pedigreed—
 - dissemination, (37) 437.
 - inspecting and distributing, (40) 233.
 - value, (40) 228.
- permeability, selective, (37) 25.
- persistency and vitality of bacteria on, (26) 820.
- phosphorus compounds in, (26) 501.
- phosphorus content, variation in, (27) 108.
- planting depths, (40) 227.
- position in planting, (40) 635.

Seeds—Continued.

- powdered, respiration, (27) 220.
- preparation, (26) 436.
- preparation and mounting, (34) 94.
- preservation, (36) 340.
- prices and movement in 1916, (37) 492.
- production, handling, and marketing, (38) 343.
- protection from insects, (39) 444.
- protection from rodents, (31) 846.
- proteins of, differentiation, (34) 577.
- pure, importance of, (26) 44.
- purity—
 - tests, (27) 342.
- tests, apparatus and methods, (34) 832.
- tests by "count," (31) 139.
- variations, tolerance table, (36) 442.
- registered, in Canada, (30) 738.
- relation—
 - of color to germination, (27) 431.
 - size to development and anatomy of plants, (30) 725.
 - size to plant yield, (26) 434.
 - weight to germinability, (30) 522.
- to number of ovules, (29) 829; (33) 130.
- reserve material of, effect of suppression, (30) 132.
- resistance to desiccation, (40) 39.
- respiration coefficient of, (29) 525.
- rest period in, (31) 335; (35) 520.
- ripening, protein formation in, (26) 729.
- ripening, reversibility of physiological processes in, (29) 526.
- role of caffeine in, (26) 823.
- rust spores in, (30) 241.
- sampling, (34) 832; (40) 145.
- sampling device for, (33) 836.
- saving, (40) 147.
- size and sprout value, relation to yield of small grain, (38) 732.
- small, improvement, (26) 838.
- standards in Canada, (26) 839.
- sterile preservation, (33) 727.
- sterility and delayed germination in, (35) 223.
- sterilization, (27) 28; (28) 727; (29) 243, 844; (35) 46; (38) 629.
- stored—
 - factors affecting viability, (30) 837.
 - insects affecting, (39) 161.
 - variations in weight of, (31) 235.
- storing in glass bottles and other containers, (32) 833.
- submerged, longevity, (33) 30.
- swelling and germination, (36) 29.
- threshing, cleaning, and grading, (30) 488.
- translocation of mineral constituents, (34) 427.
- transmission of diseases by, (36) 844.
- transportation regulations, (30) 346.
- valuation, (30) 40.
- variability in, (30) 331.
- variation in color, (26) 36.
- vegetable, breeding work, (40) 833.
- vegetable, growing in Canada, (34) 635.
- viability, (26) 819; (40) 299.
- viability as affected by cold, (27) 329.
- vitality, (27) 739.
- vitality—
 - after passing through cattle, (34) 531; (36) 223.
 - conservation, (31) 824.
 - detection, (29) 836.
 - electrical method for determining, (35) 523.
 - experiments, (38) 224.
 - in grain screenings, (29) 366.
- weed—*see also* Weed seeds.
 - analyses, (28) 464.
 - analyses and digestibility, (29) 366.
 - as affected by sulphuric acid, (27) 624.
 - as an adulterant in feeds, (30) 466.
 - buried, (39) 239.
 - content, (34) 832.
 - description, (31) 835; (34) 143; (36) 534.
 - description and key, (38) 343.
 - destruction, (30) 826.
 - determination in soils, (30) 838.
 - dispersal by birds, (30) 248; (31) 547.
 - germination, (27) 132; (28) 427.
 - germination after passing through digestive tract, (26) 839; (29) 367.
 - germination studies, (30) 332.

Seeds—Continued.

- weed—continued.
 - germinative ability, (29) 836.
 - identification, (27) 840.
 - in farm lands, (33) 138.
 - grain, (26) 135.
 - imported seed, (38) 539.
 - screenings, (34) 663.
 - soil, (34) 736.
 - notes, (27) 643.
 - school lessons on, (32) 898.
 - treatise, (31) 835.
 - vitality in cultivated soils, (31) 634.
- weight in relation to pod type, (38) 535.
- wheat, size as affecting resultant plants, (39) 743.

Seepage—

- and return waters, (38) 288.
- effect on quality of sugar beets, (28) 43.
- experiments in India, (28) 588.
- from canals, (32) 380.
- from irrigation systems, (29) 181, 289; (34) 387.
- measurements, (28) 83.
- relation to rainfall, (27) 116.

Seeta beans, notes, (26) 362.

Seeta beans, varieties, (26) 829.

Segregation in plants, (39) 123, 825.

Selches in lower Lake Michigan, (28) 415.

Seine River, pollution by sewage, (28) 619.

Seine nigromaculata injurious to pines, (30) 161.

Seismic—

- observations at Habana, (28) 213; (39) 419.
- zones, detection, (34) 118.

Seismology—

- at Pan American Scientific Congress, (34) 615.
- bibliography, (32) 810; (33) 320, 717.

Seius pomi, parasitic on red spider, (32) 157.

Selaginella rupestris, allies in southeastern United States, (40) 133.

Selection—

- effect on heredity characters, (30) 670.
- effect on plants, (35) 334.
- experiments with *Paramecium*, probable error of a difference, (39) 179.
- mass, effects of, (34) 74, 564.
- Mendelian interpretation of, (33) 822.
- natural, treatise, (31) 865.
- review of investigations, (38) 64.
- role in evolution, (39) 573.
- studies with piebald rats, (39) 877.

Selenaspidus articulatus, notes, (31) 58.

Selenomastix ruminantium, description, (30) 234.

Selenothrips rubrocinctus in Trinidad, (40) 649.

Self-binders, adjustment and repair, (28) 291.

Self-feeders for pigs, (33) 266; (37) 90, 269, 270; (38) 475, 673.

Semblis lutria, egg parasite of, (26) 557.

Seminiferous tubules, relation to secondary sex characters, (40) 467.

Semipermeable membranes, diffusion through, (34) 626.

Sempervivum rust, studies, (28) 845.

Senecio—

- jacobaea, life history and eradication, (36) 535.
- jacobaea, relation to dunsickness, (26) 480.
- latifolius, relation to hepatic cirrhosis, (27) 79.
- vulgaris, heredity of characters in, (29) 216.

Sensitive plant, notes, (26) 362.

Sensitive plant, permeability of pulvinus, (39) 730.

Sensitizin and precipitin, relationship, (34) 778.

Seoptera colon, trapping, (40) 169.

Sepsidae, synopsis, (37) 665.

Sepsis, in calves, notes, (26) 586.

Sepsis, treatment, (29) 175.

Septic—

arthritis in foals, (26) 384.

tank—

- and cesspool combined, description, (31) 190.
- description, (37) 188, 286.
- plans and specifications, (27) 167.

tanks—

- construction, (31) 893; (33) 691, 892.
- construction and operation, (28) 86; (38) 592.
- design and construction, (28) 686; (34) 887.
- for creamery sewage, (32) 889.
- for residential sewage disposal, (31) 787.
- notes, (30) 789, 790.
- tile pipe, (39) 86.
- use in sewage disposal, (28) 86.

Septicemia—

- bacillary, of *Arctia caja*, (29) 855.
- contagious, in swine, (39) 790, 891.
- group of bacteria, (40) 685.
- hemorrhagic, (39) 81, 183, 390, 488, 582, 587, 679 683; (40) 86, 183, 778.

hemorrhagic—

- bacterium, opsonic power of serums against, (27) 285.
- control in Michigan, (37) 274.
- diagnosis, (28) 281.
- feeding and immunity in (26) 374.
- immunization, (28) 281, 881; (29) 179; (34) 184; (35) 77; (37) 83, 179, 379; (38) 784; (40) 183.

in cattle, (34) 478, 782; (36) 79, 675, 676.

cattle, treatment, (31) 780; (32) 82.

mules, (38) 184.

sheep, (29) 179; (40) 782.

swine, (40) 783.

United States, (37) 274.

notes, (37) 477.

organisms, (37) 583; (38) 179.

papers on, (34) 184.

pleomorphism and mutation in organisms of, (35) 77.

preparation of serum, (36) 779.

structure of bacillus, (31) 879; (32) 32.

studies, (37) 78; (38) 887.

treatment, (28) 82; (35) 379, 784.

vitality of causative organism, (31) 579.

in cockchafer and silk worms, (30) 53.

in hogs, due to vaccination, (39) 392.

in poultry, investigations, (27) 686.

pluriform, in sheep, immunization, (27) 886.

pluriformis ovium, immunization, (32) 184.

streptococci, treatment, (39) 488.

Septobasidium—

albium, notes, (29) 752.

biological notes, (26) 52.

conidia-bearing species, (29) 752.

pedicellatum, notes, (29) 49.

spp., biology of, (28) 556.

Septogloeum—

anemones n.sp., description, (34) 242.

archidis, notes, (29) 347; (31) 243.

niisimae n.sp., description, (37) 652.

ochroleucum n.comb., description, (37) 748.

sp. on field peas, (36) 846.

ulmi, notes, (35) 454.

Septoria—

acanthi romana n.var., description, (37) 550.

albaginis n.sp., notes, (34) 842.

albaginis, winter stage of, (35) 844.

ampelina, notes, (37) 52.

apii—

graveolentis n.sp., description, (35) 846.

pathological forms, (26) 545.

relation to celery leaf spot, (33) 547.

studies, (30) 847.

treatment, (33) 848.

aurea, perfect stage, (38) 546.

azaleae, notes, (30) 247.

bataicola n.sp., description, (32) 51.

bataicola, studies, (34) 156.

chrysanthemella, notes, (35) 550.

cucurbitae n.sp., description, (37) 550.

gladioli, studies, (36) 453.

glutamarum, notes, (38) 646.

glycines n.sp., description, (35) 247.

graminis, notes, (29) 845.

leucanthermi, notes, (31) 641.

lycopersici—

description and treatment, (32) 147.

dissemination, (40) 644.

host limitations, (37) 842.

notes, (29) 246; (30) 749; (39) 149, 651, 753.

on tomatoes, (34) 53.

studies, (35) 653.

treatment, (29) 435; (33) 53; (35) 350; (36) 750; (38) 150; (39) 756.

n.spp., descriptions, (27) 848; (37) 748, 749.

ochroleuca, notes, (37) 748.

oleae n.sp., description, (35) 353.

on celery, (39) 753.

on peas, (39) 354.

parasitica, studies, (28) 750.

parietariae, notes, (26) 341.

perillae n.sp., description, (34) 242.

perillae, notes, (37) 652.

Septoria—Continued.

- persicariae n.sp., description, (39) 152.
- petasitidis n.sp., description, (37) 652.
- petroselinii apii—
 - notes, (32) 239, 544, 545; (34) 49, 350; (36) 749.
 - studies, (29) 846; (33) 742; (35) 846.
 - treatment, (30) 348.
 - wintering, (37) 840.
- petroselinii—
 - description and treatment, (28) 847.
 - notes, (27) 849.
 - on celery in storage, (31) 447.
- piccola, notes, (34) 846; (35) 454; (37) 550; (40) 53.
- pisi, notes, (32) 544.
- pisi, relation to pea blight, (29) 447.
- ribis, notes, (26) 446.
- ribis, perfect stage, (36) 246.
- ribis, studies, (33) 347; (38) 546.
- rubri, notes, (33) 647.
- sp., notes, (26) 649; (27) 45; (31) 447; (37) 550.
- sp. on cereals, (32) 843.
- sp., studies, (30) 349.
- spp., notes, (29) 49; (30) 448.
- spp. on Ribes, life histories, (37) 551.
- spp. on wheat in Australia, (37) 149.
- studies, (28) 443.

Septum, nasal tubercular, in bovines, (27) 184.

Sequoia—

- pitch moth, studies, (31) 652.
- sempervirens, ray tracheids in, (30) 744.
- Serangium giffardi n.sp., description, (32) 453.
- Serenoa serrulata, notes, (30) 145.
- Serica anthracina, notes, (30) 160.
- Serica n.sp., notes, (29) 858.
- Sericaria mori, embryology, (30) 456.
- Sericulturist station at Padua, report, (38) 859.
- Sericulture, *see* Silk culture and Silkworm.
- Sericothrips n.sp., description, (37) 258, 849.

Sero diagnosis—

- Castellani test in, (40) 288.
 - treatise, (30) 276.
 - use in grape propagation, (34) 42.
- Serological investigations, error in, (32) 178.
- Serology, index catalogue, (32) 578.
- Seroprotease, studies, (39) 608.
- Serows in British Museum, (30) 767.

Serpentine—

- fertilizing value, (32) 622; (40) 815.
 - leaf miner, studies, (29) 557.
- Serpents, wounds and diseases, (40) 55.
- Serphoidea, phoresy in, (40) 459.

Serradella—

- as cover crop for orchards, (37) 833.
- as green manure, (39) 816.
- assimilation of nitrogen by, (31) 523.
- composition and digestibility, (27) 669.
- culture experiments, (30) 632; (33) 33; (35) 736.
- culture on moorland, (30) 229.
- drying, (27) 669.
- fertilizer experiments, (32) 842; (36) 626.
- fertilizing value, (26) 438; (32) 216.
- germination as affected by fertilizers, (29) 327.
- growth as affected by fertilizer salts, (29) 329.
- history and botanical notes, (35) 736.
- inoculation, (31) 131, 524; (35) 322.
- nodule bacteria of, (32) 33.
- relation of tops to roots, (31) 733.
- seeds, microscopic characteristics, (40) 508.
- water culture experiments, (28) 817.

Serum—

- albumin, identification in solutions, (26) 201.
- anaphylaxis in bovines, (32) 178.
- and vaccine therapy, notes, (29) 377.
- anti-hog cholera, preparation and use, (26) 87.
- antistreptococcus, studies, (26) 579.
- antitrypsin during inanition, (35) 486.
- as affected by agar, (36) 575.
- as affected by lecithin, (31) 478.
- as substitute for broth for bacteriological purposes, (36) 575.
- blood, method of obtaining, (38) 181.
- bovine, for treatment of infectious diseases, (40) 583.
- bovine, haptines in, (26) 374.
- cytotoxic immune, studies, (33) 385.
- density and solution volume, (31) 804.
- determination of cholesterol in, (33) 315.
- determination of viscosity, (26) 374.
- diagnosis, optical method, studies, (27) 476.
- distribution, pipette holder for, (40) 581.

Serum—Continued.

- ferment, preparation and use, (29) 280.
 - from old horses, (40) 580.
 - globulin, identification in solutions, (26) 201.
 - globulins in bacterial infection and immunity, (36) 778.
 - hemolysins in goats, studies, (27) 476.
 - human, autoagglutinin in, (39) 186.
 - inhibitory action on bacteria staining, (37) 478.
 - injections, effect on rectal temperature of guinea pigs, (28) 781.
 - law in Maryland, (29) 385.
 - leucocogenic, nature and use, (26) 580.
 - medium, substitute, (39) 583.
 - nontoxic, preparation, (31) 479.
 - normal, opsonins of, (33) 178.
 - of cows immunized against tuberculosis, (33) 181.
 - domestic animals, refraction coefficient, (32) 778.
 - glandered animals as a precipitant for mal-
lein, (26) 483.
 - pigs, refractive index, (33) 483.
 - sea eel, toxicity and properties, (38) 582; (40) 880.
 - sick horses, sodium chlorid figures, (40) 287.
 - various animals, comparison, (30) 68.
 - pathology, notes, (27) 284.
 - physiology, international catalogue, (34) 658; (35) 574; (39) 190; (40) 869.
 - polyvalent hemolytic, preparation, (26) 374.
 - precipitating, from sunflower seeds, (28) 801.
 - precipitin, production, (35) 881.
 - precipitin reactions, discussion, (26) 482.
 - preparation and standardization, (33) 280.
 - preservatives, pharmacological action, (33) 280.
 - proteases, studies, (34) 674.
 - proteid bodies, biological value, (28) 66.
 - proteins of different animals, (28) 875; (32) 861; (35) 372.
 - reactions, mechanism, (37) 477.
 - reactions, relation between, (36) 478.
 - sensitization, relation to antitoxin dosage, (32) 372.
 - sickness, prophylaxis, (40) 580.
 - sickness, studies, (39) 284.
 - study, laboratory course, (35) 73.
 - therapy—
 - and diagnosis, handbook, (26) 578.
 - antigangrenous, (40) 83, 84, 381, 884.
 - in trichinosis, (40) 184.
 - treatise, (31) 177.
 - vaccination, and immunity, treatise, (27) 76.
 - toxicity, primary, notes, (29) 477.
 - treating with parabin, (37) 376.
 - veal agar, notes, (38) 684.
- Serums—*see also* Antiserum.
- acid-soluble phosphorus of, (35) 714.
 - analyses and nitrogen distribution, (36) 80, 576.
 - animal, antihemolysin in, (28) 179.
 - antiagressin, notes, (27) 883.
 - antibacterial action, (35) 381.
 - antitoxic—
 - and bactericidal, notes, (32) 78.
 - concentration, (35) 680; (36) 178, 179; (37) 877; (38) 504; (39) 487; (40) 287, 288.
 - production, (40) 580.
 - antituberculous immune, examination, (28) 377.
 - autodigestion, (39) 608.
 - bactericidal action, (26) 175.
 - diagnostic, inspection in Oregon, (32) 778.
 - effect on tissues, (35) 881.
 - guaranties of preparation and distribution, (39) 680.
 - hydrogen-ion concentration, determination, (38) 505.
 - immune—
 - obtaining from large animals, (26) 676.
 - preservation, (26) 83.
 - selective absorption, (40) 678.
 - taeniolysins in, (28) 375.
 - treatise, (26) 579; (38) 378.
 - in treatment and diagnosis, (36) 575.
 - infusion apparatus for administering, (32) 272.
 - inhibition of precipitation by, (26) 175.
 - intrasplinal injections of, (32) 876.
 - phagocytic action on pathogenic bacteria, (27) 285.
 - polyvalent, use, (36) 277.

Serums—Continued.

- precipitating, (26) 175.
- preparation, (36) 779.
- preparation and sale in United States, (32) 875.
- preservatives in, determination, (38) 316.
- preservatives in, toxicity, (38) 283.
- production—
 - and distribution, (36) 675.
 - and distribution in Holland, (29) 377; (38) 180.
 - and valuation, (27) 476.
- propagation and sale, (28) 677; (39) 787.
- protective and curative, valuation, (32) 78.
- purification, (39) 183.
- syphilitic, precipitation of organic colloid by, (39) 487.

Sesame—

- as honey-producing plant, (40) 65.
- cake—
 - acidity, (32) 259; (35) 770.
 - agglutinating properties, (31) 774.
 - analyses, (26) 165, 266, 267, 363, 770; (27) 570, 872; (29) 467; (30) 67, 268, 467; (31) 467; (33) 170, 870; (34) 263.
 - detection in linseed cake, (28) 873.
 - digestibility, (28) 464.
- cake, effect on—
 - composition of milk, (26) 879.
 - milk and butter, (34) 570.
 - milk production, (26) 273.
 - quality of butter, (26) 369.
- cake—
 - feeding value, (38) 572.
 - fertilizing value, (38) 527.
 - for dairy cattle, (34) 874.
 - meal, analyses, (31) 864.
 - nutritive value, (28) 673.
 - sugar content, (37) 208.
- culture and utilization, (33) 438.
- culture experiments, (27) 336; (38) 336, 527, 635.
- diseases in India, (33) 846.
- effect on following crop of cabbage, (31) 329.
- improvement, (28) 736.
- insects affecting, (28) 555.
- meal, analyses, (30) 268; (34) 467; (38) 665.
- meal, bacterial flora of, (32) 75.
- meal for pigs, (29) 371.
- oil, chemical and physiological tests, (33) 362.
- detection, (26) 207, 497; (29) 613; (37) 13.
- detection in butter, (26) 212.
- digestibility, (36) 860.
- hardened, analyses and digestibility, (33) 564.
- in margarin, (31) 811.
- physical constants, (35) 312.
- press cake, analyses, (40) 72.
- rot bacteria affecting, (29) 345.
- rotation crop for, (36) 830; (38) 526.
- seed, analyses, (31) 864.
- seed, composition and nutritive value, (34) 565.
- varieties, (30) 525, 731.
- wilt, notes, (31) 641; (34) 50; (38) 351.

Sesamia—

- cretica, notes, (27) 53.
- fusca, life history and remedies, (29) 356.
- inferens, notes, (33) 856; (35) 58.
- nonagrioides, notes, (33) 554.
- vutera, notes, (38) 465.

Sesamum—

- culture in Philippines, (40) 632.
- indicum—
 - analyses, (38) 368.
 - culture experiments, (32) 227.
 - loss in weight after harvesting, (38) 635.

Sesbania—

- aculeata as green manure, (30) 339; (33) 131; (36) 232; (37) 824.
- aegyptiaca as green manure, (37) 320.
- description, (30) 828.
- grandiflora, notes, (30) 525.

Sesla—

- brunneri n.sp., description, (33) 655.
- custaneae n.sp., description, (29) 758.
- geliformis, notes, (38) 762.
- novaroensis, studies, (33) 454.
- rhododendri, notes, (33) 252.
- rileyana, notes, (35) 657.
- spp., notes, (28) 155.
- tipuliformis, see Currant borer.

Setaria—

- flava, notes, (26) 362.
- glauca, analyses, (28) 768.
- italica, culture experiments, (32) 227.
- italica, notes, (30) 233.
- spp., analyses, (28) 463.
- verticillata, analyses and digestibility, (27) 871; (32) 167.
- viridis, analyses, (34) 39.

Setomorpha—

- margalaestriata n.sp., studies, (40) 854.
- on tobacco, (40) 854.

Settlers, prospective in Alaska, information for, (35) 295; (36) 791.

Seuratia spp., descriptions, (27) 450.

Seven-day fever, causative agent, (40) 85.

Severinia buxifolia as a stock for citrus, (36) 241.

Sewage—see also Tannery waste, Wool waste, etc.

- activated-sludge, treatment, (35) 490.
- aeration, (37) 87.
- analyses, (28) 811.
- analysis, textbook, (33) 206.
- as affected by added nitrate, (26) 725.
- as source of ammonium sulphate, (34) 424.
- as source of nitrogen, (38) 625.
- bacteria, relation to shellfish pollution, (27) 212.
- bacteriology, (34) 591.
- changes during purification, (39) 216.
- clarification in Germany, (26) 515.
- disinfection, (28) 487.
- disinfection by chlorid of lime, (29) 512.
- disposal, (31) 592, 893; (34) 790, 886.
- disposal—
 - and treatment, (26) 215.
 - biology, (32) 552.
 - by broad irrigation, (36) 183.
 - for country homes, (27) 389; (28) 86, 487; (29) 194; (30) 690; (31) 291, 292, 786; (32) 87; (34) 88, 286, 790; (35) 83, 691, 887; (36) 184, 591.
 - farms, (33) 784, 892; (34) 687; (37) 589; (38) 138.
 - farms, handbook, (28) 789.
 - rural schools, (37) 696, 884.
 - village and rural homes, (37) 286.
- from hospitals and medical establishments, (33) 486.
- in Europe, (28) 619; (30) 512.
- Glasgow, (26) 516.
- Great Britain, (28) 214.
- Illinois, (35) 389.
- industrial and rural communities, (34) 488.
- institutions, (37) 385.
- Milwaukee, (36) 489.
- New South Wales, (29) 785.
- rural districts, (30) 390; (33) 590, 591; (34) 592, 887; (36) 892.
- the Tropics, (31) 489.
- unsewered districts, (32) 387.
- notes, (27) 512; (28) 619; (29) 86; (30) 790.
- on sewer farms, (26) 28.
- plant for Torrance, California, (32) 88.
- disposal plants—
 - designs, (31) 190.
 - for farms, (31) 291.
 - residential, design, (27) 17, 590; (32) 890.
 - small, (38) 85.
 - treatise, (33) 785.
- disposal—
 - relation to mosquitoes, (32) 554.
 - relation to pellagra, (31) 893; (37) 694.
 - residential, (33) 691.
 - septic tanks for, (28) 86; (31) 787; (34) 591.
 - systems, small, construction, (34) 887.
 - treatise, (27) 212, 213; (30) 511.
 - works, notes, (28) 515.
- effluent—
 - absorption of oxygen by, (26) 406.
 - nitrite content, (26) 406.
 - probability of decomposition in, (31) 387.
- farm at Melbourne, (30) 816.
- farm, near Cairo, Egypt, (30) 512.
- farms of Berlin, (26) 317; (27) 318.
- farms of Paris, (28) 619.
- fertilizers from, (33) 219.
- fertilizing value, (26) 716; (28) 514; (30) 621; (31) 816; (34) 886; (35) 629; (40) 135.
- filter files, studies, (40) 556.
- filters, notes, (37) 488, 489.
- filters, tests, (34) 888.

Sewage—Continued.

- fly, biology, (32) 552.
- from dairies, purification, (33) 784.
- from packing houses, treatment, (37) 694.
- from piggeries, treatment, (33) 684.
- from sugar refineries, purification, (33) 785.
- handling, (28) 28.
- injury to crops, studies, (33) 588.
- irrigation, (27) 318, 590; (34) 886.
- irrigation—
 - effect on composition of soils, (26) 614.
 - for forests, (33) 343.
 - in Germany, (34) 687.
 - notes, (37) 185.
 - relation to diseases, (31) 417.
- methods of analysis, (29) 408; (31) 806.
- methods of examination, (37) 311; (39) 13.
- microbiology of, (26) 372.
- mycology of, (30) 418.
- nonnitrication in sea water, (26) 317.
- of New York City, utilization, (33) 124.
- oxidation without filters, (32) 387; (34) 887.
- pathogenic organisms in, detection, (38) 188.
- plants, Imhoff, description, (30) 489.
- pollution in lower Missouri River, (29) 512.
- pollution, relation to typhoid fever, (27) 318.
- purification, (26) 318, 716; (33) 422, 691; (34) 390; (35) 188, 388, 579, 787, 887; (36) 687; (37) 286, 488, 694, 787, 789; (38) 85.
- purification—
 - and disposal, (32) 88.
 - and disposal in Germany, (34) 687.
 - and utilization, (32) 87.
 - at Atlanta, Georgia, (29) 617.
 - bibliography, (38) 691.
 - by aeration, (34) 488; (38) 490.
 - by bacteria, (28) 686.
 - colloids in, (31) 616.
 - for country houses, (28) 386.
 - Imhoff clarification tank, (26) 215.
 - notes, (28) 124, 318.
 - plant, isolated, construction, (28) 289.
 - test of filtering materials, (28) 789.
- putrescibility test for, (38) 489.
- residue, analyses, (35) 128.
- sedimentation tank, new type, (29) 293.
- sickness in land filtration, (26) 615.
- sickness in soils, studies, (28) 119.
- sludge—
 - analyses, (27) 318; (32) 88; (33) 723; (34) 222, 423, 624.
 - as a fertilizer, (32) 88.
 - as a fertilizer in British Isles, (31) 417.
 - cake, analyses, (26) 516.
 - clarification, (31) 417.
 - disposal, (27) 17; (28) 515.
 - disposal, "Grossmann" process, (28) 28.
 - drying, (26) 118.
 - fertilizing value, (27) 318, 327; (30) 621; (31) 316; (33) 423; (34) 219, 222, 423, 624.
 - for arid soils, (34) 621.
 - purification, (28) 289.
 - treatise, (26) 717.
 - treatment in Germany, (26) 515.
 - utilization, (26) 615, 624; (27) 318, 521, 629, 817; (30) 19, 512; (33) 24, 124; (34) 287, 332, 889; (35) 188; (37) 425.
 - utilization in England, (27) 16.
- tank, rectangular v. circular, (31) 592.
- tanks, tile pipe, (39) 86.
- treatment—
 - Dickson centrifuge system, (34) 423.
 - in small communities, (36) 390.
 - plants, residential, construction, (34) 88.
 - plants, small, tests, (35) 287.
 - with activated sludge, (33) 786; (34) 591.
- use in irrigation, (26) 716.
- utilization, (26) 716; 717; (29) 617; (30) 399; (31) 417.
- utilization in Italy, (38) 723.
- water, methods of analysis, (31) 502.
- works, small, investigations, (28) 386.

Sewer—

- air, chemistry and bacteriology of, (28) 592.
- pipe, methods of testing, (27) 87.
- pipe, specifications, (29) 290.
- pipe, tests, (29) 685; (30) 787; (33) 392.
- systems, rat-proofing, (30) 153.

Sewerage practice, treatise, (34) 886.

Sewers—

- design and construction, (29) 182; (34) 886.
- design and installation, (30) 790.
- intercepting traps in, (28) 591.
- ventilation, (28) 592.

Sewing—

- clubs for girls, notes, (29) 395.
- contest clubs in Idaho, (28) 694.
- contests in Rhode Island, (28) 299.
- in graded schools of Wisconsin, (33) 195.
- instruction in Porto Rico, (33) 397.
- lessons in, (28) 299; (31) 693; (32) 394, 598.
- notes, (28) 694.
- teaching, (34) 899.

Sex—

- and heredity, manual, (30) 767.
- cells, male, biology, (28) 676.
- cells, notes, (26) 364.
- characters—
 - in the ruddy duck, (39) 878.
 - secondary, factors affecting, (27) 275.
 - secondary, in birds, (40) 871.
 - secondary, in pheasants, (31) 271.
 - secondary, studies, (26) 364; (27) 869; (28) 668.
 - studies, (40) 467.
- chromosome in males of domestic chickens, (30) 772.
- chromosomes in *Drosophila*, (31) 865.
- control in pigeons, (35) 771.
- control in rotifers, (34) 766.
- cords and germ cells, origin in male chick, (38) 173.
- determination—
 - in birds, (37) 772, 868.
 - cattle, (33) 669.
 - guinea pigs, (33) 168.
 - mammals, (39) 575.
 - sheep, (31) 267.
 - notes, (26) 364.
 - review of literature, (27) 368, 369; (28) 271.
 - studies, (26) 365, 471, 773; (27) 275, 573; (28) 68, 875; (30) 267; (31) 564, 765; (34) 564, 864; (38) 65, 66.
- development as affected by pituitary feeding, (34) 765.
- differences, origin, (27) 369.
- evolution in plants, treatise, (32) 725.
- glands, relation to lime metabolism, (28) 370.
- glands, studies, (27) 770.
- hormones, action in fetal life of cattle, (40) 466.
- inheritance in grapes, (39) 242.
- inheritance in strawberries, (39) 349.
- organs, female, thyroid gland of, (28) 271.
- ratio, control, (39) 575.
- ratio, control in dairy cattle, (38) 175.
- ratios in pigeons, (33) 369.
- relation to color and fertility in pigs, (30) 472.
- sequence in fowls, (39) 781.
- studies, (40) 664.
- studies with fowls, (39) 177.
- trimorphism, studies, (28) 571.
- Shaddocks, culture in Barbados, (28) 828.
- Shade—
 - effect on—
 - composition of tobacco, (30) 430.
 - evaporation in plants, (26) 821.
 - plant growth, (29) 130; (30) 343.
 - tobacco, (33) 521.
 - transpiration of white pine seedlings, (33) 224.
 - woody plant seedlings, (30) 430.
 - relation to evaporation and transpiration in nursery beds, (31) 838.
- Shaftal as a forage crop, (38) 230.
- Shafting, size and strength formulas for, (31) 688.
- Shaking machine, description, (36) 413.
- Shallu—
 - analyses, (37) 539.
 - as dry-farm crop, (39) 736.
 - culture experiments, (29) 426; (32) 526.
 - description and culture, (37) 740.
 - drought resistance of, (28) 633.
 - notes, (29) 141.
 - stover, digestibility and productive value, (37) 865.
 - varieties, (37) 338.
- Share leasing, adaptation to joint-stock agricultural societies, (40) 490.
- Sharps, analyses, (26) 666.

- Shaw, W. G., biographical sketch, (40) 600.
 Shea butter, analyses, (37) 14.
 Shea butter, detection, (29) 613.
 Sheda grass, analyses, (28) 768.
 Sheep—*see also* Ewes, Lambs, *etc.*
 African woolless, in Porto Rico, (31) 664.
 African woolless, notes, (27) 872.
 alfalfa pasture for, (36) 169; (38) 67.
 amebae affecting, (27) 477.
 anaphylactic shock due to ox-warble extract, (37) 379.
 and intensive farming, (39) 477.
 and its cousins, treatise, (28) 770.
 anthrax affecting, (29) 582.
 as affected by—
 castration and ovariectomy, (27) 70.
 larkspur, (27) 180.
 magnesium chloride, (28) 672.
 summer shearing, (32) 260.
 barns and pens, (38) 693.
 barns for prairie farms, (35) 690.
 barns, plans, (31) 488.
 Blackface, notes, (33) 669.
 blowfly, control by birds, (40) 351.
 blowfly, remedies, (34) 359.
 bone content, (31) 564.
 Border Leicester, notes, (33) 669.
 botfly, *see* Oestrus ovis.
 Boulonnaise, notes, (30) 173.
 brains of, (31) 168.
 branding paints, notes, (28) 796.
 branding paints, tests, (27) 874; (34) 668.
 breed characteristics, (29) 369.
 breeding—
 and care, (33) 71.
 and management, (27) 873; (28) 468.
 experiments, (28) 570, 672; (29) 171, 370, 669, 771, 870; (30) 372; (31) 664; (32) 261; (33) 73, 570; (34) 768; (35) 170, 565, 772; (36) 765; (37) 66, 99, 676, 770, 866; (38) 270; (39) 775; (40) 74.
 for fat lamb production, (39) 273.
 for fur, (29) 872.
 history, (26) 368.
 in Alaska, (28) 465; (29) 771.
 East Friesland, (27) 873.
 New South Wales, (27) 470.
 New Zealand, (26) 769.
 Philippines, (30) 869.
 Punjab, (30) 767.
 Tennessee, cooperation in, (26) 167.
 maintenance rations for, (34) 171.
 wintering experiments, (33) 760.
 breeds—
 British, (27) 771; (29) 571.
 for the farm, (31) 75.
 in New Zealand, (34) 566.
 of central Pyrenees, (32) 866.
 Scottish, origin and development, (31) 768.
 broad-tailed, characteristics, (27) 771.
 caracul—
 breeding experiments, (31) 367.
 characteristics and crossing experiments, (34) 372.
 factors affecting fleece, (27) 277.
 in Argentina, (32) 261.
 inheritance of wool, (38) 575.
 notes, (30) 469, 569; (31) 567; (35) 170.
 origin, (32) 365.
 origin and characteristics, (33) 871.
 types of, (26) 874.
 carcass competition, (29) 369.
 care and management, (31) 470, 666.
 castor bean plant for, (26) 368.
 castrated, horn growth in, (31) 867.
 castration, (29) 168.
 cattle, and pigs, handbook, (28) 769.
 cells, formalinized, use in complement fixation tests, (29) 676.
 chest contour caliper, (40) 277.
 Cheviot, in England and Scotland, (31) 768.
 coarse-wool, fleece of, (36) 270.
 Corriedale—
 in United States, (32) 866.
 notes, (29) 469.
 origin and development, (34) 566.
 record association, (34) 869.
 cost of production, (35) 668.
 coyote-proof fence for, (26) 73; (39) 172.
 cysticerci affecting, (27) 182.
 dairy farming with, (29) 876.
 Sheep—Continued.
 degeneration in teeth of, (33) 270.
 diagnosing time of parturition, (31) 876.
 digestion experiments, (26) 769; (27) 669; (28) 171, 464, 669; (30) 372, 565, 566, 568; (31) 667, 765, 767, 862; (32) 68, 167, 168, 667, 709, 770; (33) 758; (37) 168; (38) 368, 571; (39) 171.
 dipping—
 experiments, (33) 571.
 for scabies, (26) 587.
 shower-bath system, (32) 888.
 tanks, construction, (31) 786.
 dips, notes, (35) 678.
 dips, soda-sulphur, (40) 208.
 disease—
 description, (33) 680.
 in Patagonia, (39) 85.
 in Transvaal, (26) 173.
 Nairobi, investigations, (26) 678.
 new, in Peru, (38) 687, 688.
 notes, (27) 181.
 peculiar, in Hawaii, (31) 177.
 diseases—
 handbook, (37) 778.
 in British East Africa, (30) 576.
 losses from, (35) 192.
 nature and treatment, (34) 383.
 notes, (30) 381; (37) 374, 876.
 parasitic, in Algeria, (31) 86.
 parasitic, notes, (27) 181.
 remedies, (31) 666.
 treatise, (36) 182; (38) 781.
 domestic breeds in America, (31) 567.
 domestic, origin, (29) 469; (31) 564, 768.
 Dorset Horn, notes, (29) 572.
 dressing and skinning, (29) 469.
 drenching, apparatus for, (38) 884.
 dual-purpose range, breeding, (34) 566.
 entrails, utilization, (30) 567.
 erythrocytes, preservation, (40) 479.
 excretion of phenol by, (28) 874.
 factors affecting pulse rate, (28) 768; (29) 66.
 farming—
 in America, treatise, (26) 769.
 in British Isles, treatise, (37) 770.
 in North America, treatise, (30) 173.
 fat-tailed—
 description, (27) 571, 771.
 in Afghanistan, (30) 469.
 notes, (28) 468; (29) 572.
 fecundity in, (30) 870; (31) 261.
 feeding—*see also* Ewes and Lambs.
 and care, (30) 672.
 and management, (29) 469, 870.
 experiments, (26) 266, 267, 567, 574, 767, 874; (28) 364, 571, 573, 669, 872; (29) 169, 170, 272, 367, 369; (30) 173, 371, 473, 566, 568, 613, 671, 768, 770; (31) 766; (32) 166, 258, 259, 363, 463, 468, 667, 669, 863; (33) 374, 760; (34) 73, 171, 667; (35) 168, 474, 476, 565; (36) 66, 169, 568, 667, 765, 867; (37) 67, 270, 676, 866; (38) 167, 270, 271, 370, 771.
 experiments with taka-diastrase, (33) 569.
 for the show ring, (27) 68.
 in Scotland, (31) 470.
 notes, (26) 164; (29) 572.
 on silage, (26) 570.
 rack, description, (38) 593.
 fish for, (32) 862.
 fish meal for, (33) 169.
 fleece record, (35) 772.
 fly, Australian, in Hawaii, (40) 263.
 food plants of in Mica Mountain range, (30) 568.
 for the Southwest, (28) 672.
 forage crops for, (28) 267.
 forest grazing, (40) 343, 448.
 four-horned, in Scotland, (31) 768.
 grape marc for, (32) 567.
 grazing—
 experiments, (30) 770.
 farms in Queensland, (27) 71.
 on Johnson grass-infested ditches, (32) 568.
 relation to wood ticks, (29) 658.
 growth of, (30) 370, 467.
 "half-bred," in England and Scotland, (31) 768.
 handbook, (27) 673.
 handling, "blanket" system, (33) 669, 670.
 handling in California, (34) 868.
 handling on ranges, (39) 171, 773.
 heather and moor burning for, (40) 667.

Sheep—Continued.

- Hebridean, notes, (31) 75.
- hemolymph nodes of, (32) 82.
- horn growth as affected by castration, (29) 772.
- horns, a sex-limited character, (26) 769; (27) 370.
- host of spotted fever tick, (26) 64.
- immunity against tuberculosis, (26) 181.
- immunization against—
 - anthrax, (28) 376, 778; (31) 82.
 - gangrenous mammitis, (30) 83.
 - pluriform septicaemia, (27) 886.
 - rabies, (30) 282.
- improvement, (29) 299.
- improvement, value of good sires, (37) 866.
- in Belgium, importation and exportation, (32) 668.
- British Museum, (30) 767.
- Germany, (33) 296, 668.
- Kongo, (31) 865.
- United States, (31) 73, 167, 868.

industry—

- in Australia, (27) 470; (29) 570; (32) 261.
- British Empire, (28) 468, 874.
- Canada, (26) 769; (32) 771.
- Chile, (27) 470.
- Germany, (30) 170.
- Great Britain, (26) 769.
- Hungary, (27) 672; (29) 670.
- New Zealand, (31) 467; (33) 268.
- Oklahoma, (36) 765.
- Pacific Northwest, (36) 766.
- Philippines, (26) 666.
- Queensland, (27) 489.
- Russia, (28) 468; (29) 570.
- South America and Western Europe, (31) 895.
- Spain, (29) 370.
- Tennessee, (32) 670.
- Union of South Africa, (31) 268.
- United States, (26) 389, 769; (31) 868.
- United States, New Zealand, and Australia, (34) 372.
- Uruguay, (27) 171.
- instruction in New South Wales, (26) 799.
- monograph, (28) 268.
- statistics, (27) 571.
- infectious foot disease of, (26) 383, 882.

inheritance—

- in, (34) 864.
- of color in, (38) 574.
- fertility in, (38) 574.
- horn and wool covering in, (28) 570.
- horns in, (27) 468, 870; (28) 267.
- mutton points, (39) 477.
- short ears in, (35) 772.
- twinning in, (34) 73; (39) 775.
- wool characters in, (32) 99, 399.
- wool color in, (29) 771.
- wool production in, (34) 74.

injury due to grazing, (29) 543.

- internal parasites of, (36) 97.
- intestinal parasites of, (34) 188.
- jack beans for, (33) 267.
- Japan clover for, (26) 235.
- judging, (33) 71; (37) 94.
- judging in secondary schools, (38) 496.
- Kentish, as affected by Cheviot blood, (29) 369.
- killing dogs, (32) 866; (39) 172.
- labor requirements, (36) 790.
- lessons on, (27) 394.
- lip and leg ulceration in, (31) 880.
- localization of pigment in, (27) 369.
- loupings-ill or trembling in, (36) 83.
- louse, biting, notes, (32) 377.
- maggot flies—
 - description, (32) 757.
 - in Australia, (29) 656; (30) 160.
 - notes, (34) 64; (37) 160; (38) 466.
- maintenance requirements, (26) 665.
- management, (29) 870.
- management—
 - guide, (26) 570.
 - on national forests, (34) 868.
 - on the farm, (30) 372; (37) 676.
 - treatise, (35) 772.

manure—

- analyses, (26) 727; (32) 519; (34) 521; (36) 120; (38) 23.
- and wool waste, analyses, (32) 32.
- effect on soil potash, (36) 625.

Sheep—Continued.

manure—continued.

- fertilizing value, (29) 737; (38) 433.
- storage experiments, (37) 628.
- Manx, notes, (31) 75.
- marketing in the South, (37) 391.
- Mauchamp, origin, (28) 770.
- measurements, (29) 169.
- Merino, in New South Wales, (30) 372.
- metabolism cage for, (26) 268.
- metabolism experiments, (26) 164; (27) 569; (28) 362.
- microbial flora of large intestine, (29) 466.
- mineral requirements, (40) 769.
- morphology of blood, (28) 777.
- mucous membrane of, (26) 480.
- mutton, handbook, (28) 467.
- nematodes affecting, (34) 275; (35) 78.
- new born, weights, (32) 862.
- new parasitic disease affecting, (28) 680.
- nutritive requirements, (31) 766.
- of Asiatic Russia, (30) 469.
- Bosnia and Herzegovina, (30) 870.
- Manche, characteristics, (27) 71.
- Roman fields, characteristics, (27) 71.
- Tunis and Algeria, description, (28) 672.
- on alfalfa farms in Texas, (34) 73.
- Onchocerca gibsoni affecting, (27) 475.
- open range v. pasture and corral method of lambing, (34) 868.
- origin, (26) 368.
- origin and distribution, (31) 564.
- pancreas, growth-producing substance in, (36) 160.
- parasites affecting, (38) 183; (40) 778.
- parasites, remedies, (31) 666.
- pasturage system for, (34) 566.
- pasturing experiments, (32) 567; (35) 567; (38) 67, 175; (39) 879; (40) 371.
- pasturing on irrigation ditches, (40) 472.
- paunch movements in, (27) 68.
- physiological function of pineal gland, (29) 168.
- Piebold, notes, (31) 75.
- pine needles for, (28) 768; (35) 474.
- plague, immunization, (32) 184.
- poisoning by—see also Plants, poisonous.
 - flaxseed screenings, (26) 86.
 - locoweed, (31) 781.
 - lupines, (36) 276.
 - western goldenrod, (37) 482.
 - woody aster and death camas, (28) 197.
- Zygadenus, (33) 177.
- pox, experimental transmission, (28) 183.
- pox, immunization, (27) 886; (28) 285; (29) 680, 681; (31) 884.
- pox, notes, (26) 373; (27) 583.
- prices, 1818–1915, (38) 575.
- primitive breeds and their crosses, (31) 75.
- primitive breeds in Scotland, (26) 768.
- protection in Alaska, (36) 791.
- pure-bred, in Montana, (36) 470.
- rabies affecting, (28) 586.
- raising, (37) 773.
- raising—
 - equipment for, (37) 388.
 - in Alaska, (36) 470; (39) 168.
 - Argentina, (37) 770.
 - Australasia, (33) 270; (38) 372.
 - blue grass region, (35) 868.
 - Colorado, (38) 772.
 - French Sudan, (26) 268.
 - Great Britain, book, (26) 167.
 - Kentucky, (38) 273; (39) 371.
 - Louisiana, (29) 469.
 - Maine, (33) 73; (37) 676; (39) 372.
 - New England, (39) 172.
 - North and South America, (34) 305.
 - North Carolina, (28) 73.
 - Ontario, (29) 369.
 - the West, (35) 667; (40) 177.
 - Wisconsin, (35) 272.
- on Indian reservations, (35) 374.
- irrigation projects, (38) 168.
- southern farms, (32) 568.
- the farm, (38) 69, 298, 575.
- the range, treatise, (29) 666.
- Rambouillet, in France, (29) 273.
- Rambouillet, inbreeding, (28) 366.
- range, cottonseed cake for, (39) 172.
- range, emergency feed for, (40) 277.
- rations for, (30) 169.

- sheep—Continued.
 refuse brewers' yeast for, (33) 568.
 reproductive organs, (27) 369.
 resistance to trypanosomiasis, (26) 84.
 respiration calorimeter for, (28) 463.
 reversion in, (34) 73.
 rotation of blood plasma and serum in, (29) 881.
 rumination in, (26) 469.
 sarcosporidia in, (28) 885.
 scab—
 control in California, (34) 275.
 control in England, (36) 275.
 control in Hawaii, (34) 477.
 in Germany, (28) 583.
 in Great Britain, (32) 271; (34) 382; (36) 378.
 notes, (35) 78; (39) 387; (40) 676, 778.
 outbreaks in England, (38) 282.
 parasite, life history, (33) 384.
 tobacco dips for, (29) 194.
 treatment, (27) 477.
 screenings for, (32) 770.
 selection on basis of family performance, (37) 676.
 serum, complementary and antihemolytic properties, (31) 277.
 sex determination in, (31) 267.
 shearing—
 and washing experiments, (35) 477.
 shed, yards, and dip for, (33) 589.
 sheds and yards, construction, (34) 789.
 sheds, description, (37) 572.
 twice v. shearing once, (26) 368.
 Siebenbürg Racka, notes, (26) 275.
 skull and head measurements, (28) 767.
 slaughter tests at Smithfield Show, (31) 565.
 slaughtering on the farm, (35) 317.
 "spewing sickness," cause, (36) 680.
 sphagnum turf for, (35) 474.
 stone, description, (26) 874.
 streptococcal infection in, (26) 683.
 structure of third stomach, (28) 271.
 Suffolk, origin and characteristics, (26) 165, 874.
 susceptibility to tuberculosis, (26) 178.
 tapeworm, morphology, (30) 584.
 Tasmanian Merino, notes, (29) 572.
 textbook, (31) 470.
 tick—
 as host of *Nosema* spores, (30) 459.
 eradication, (32) 757; (38) 357.
 eradication in New Zealand, (38) 82.
 flagellate, relation to sheep's blood, (26) 760.
 in South Australia, (31) 853.
 infested, dipping, (32) 796.
 life history, (29) 756.
 notes, (26) 781; (32) 377.
 paralysis in, (30) 182.
 trypanosome in, (26) 383.
 viability, (37) 764.
 treatise, (26) 165; (30) 795; (31) 768; (32) 365.
 uniform classification for fairs, (33) 697.
 use against spotted fever ticks, (30) 162.
 vegetable-ivory meal for, (36) 368.
 warm water for, (37) 268.
 weight of successive clips, (39) 775.
 wild, notes, (31) 367.
 wild, of the Argali type, (31) 768.
 wild, origin and distribution, (29) 469.
 wintering experiments, (28) 573.
 wintering in North Carolina, (35) 97.
 wireworm, life history, (29) 476.
 Yunnan, notes, (35) 375.
 Sheepskins, curing and marketing, (27) 470.
 Shellac—
 arsenic content, (26) 710.
 detection in ethyl alcohol, (29) 312.
 manufacture, (27) 210.
 methods of analysis, (27) 210.
 Shellfish—
 bacteriological examination, (29) 814.
 examination, (32) 854; (36) 159.
 green color in, (36) 861.
 handling and marketing, (31) 63.
 industry in New Jersey, (32) 357; (36) 689.
 industry, sanitary control, (36) 463.
 industry, treatise, (27) 472.
 inspection in New Jersey, (35) 165.
 methods of examination, (35) 287.
 opened, examination, (28) 166.
 pollution, relation to sewage bacteria, (27) 212.
 Potomac River, examination, (35) 287.
 problems, research on, (40) 459.
 Shellfish—Continued.
 relation to typhoid fever, (28) 258.
 sewage-polluted, damage from, (27) 866.
 transmission of diseases by, (30) 368.
 Shells, analyses, (35) 430.
 Shelter belts—
 notes, (37) 837.
 on the Great Plains, (40) 841, 842.
 planting in northern Great Plains, (34) 742.
 renewing, (35) 146.
 Shenandoah River sediment, analyses, (30) 223.
 Sheora grass, analyses, (28) 768.
 Shepherd's purse—
 geographical distribution, (26) 335.
 new species, (26) 529.
 Shepherds of Britain, book, (26) 167.
 Shetland ponies, treatise, (30) 270.
 Shield bearer, resplendent, notes, (30) 657.
 Shield scale fungus, notes, (27) 358.
 Shillong—
 fruit experiment station, report, (33) 238.
 (Upper) station, report, (33) 227.
 Shingle—
 industry in Canada, (23) 544; (28) 644; (30) 46;
 (32) 841; (35) 347; (36) 244; (37) 245; (38) 146.
 industry in United States, (30) 845.
 roofs, fire retardants for, (36) 687.
 Shingles—
 preservation, (38) 248.
 production in 1915, (37) 148.
 production in 1916, (39) 452.
 production in 1917, (40) 843.
 Shiokara, ripening, (28) 359.
 Ship stuff, analyses, (26) 362, 568, 768, 873; (27) 171;
 (28) 265, 669; (29) 270, 467; (31) 366, 467; (32) 667,
 862; (33) 71; (34) 263, 566, 767; (38) 572.
 Shipping associations, cooperative, (33) 91.
 Shipping fever, *see* Influenza, equine.
 Ships' lines, rat guard for, description, (27) 550.
 Shiromoji seed, oil of, (37) 109.
 Shivaphis n.g. and n.sp., description, (40) 650.
 Shoddy—
 and shoddy waste, analyses, (28) 523.
 dirt, analyses, (32) 32.
 fertilizing value, (32) 325; (33) 125, 327.
 "Shogaol," isolation from ginger, (39) 610.
 Shoots, growth as affected by decapitating or in-
 version, (33) 827.
 Shop work on farms, textbook, (33) 792.
 Shorea robusta—*see also* Sal.
 ecology, (32) 144; (36) 345, 844.
 economic value, (30) 239.
 germination tests, (27) 147.
 girth increment in even-aged crops, (40) 153.
 natural reproduction and improvement, (34) 347,
 839.
 regeneration, (40) 843.
 Shorts—
 analyses, (26) 468, 568; (27) 68, 171, 775; (28) 265,
 464; (29) 270, 467, 769; (30) 366, 371, 467; (32)
 465, 667, 862; (33) 71, 568, 870; (34) 169, 263, 566,
 663, 767; (36) 65, 268; (39) 370; (40) 72, 571, 768.
 use in poisoned bait for cutworms, (34) 358.
 Shoshone irrigation project, drainage of, (31) 889.
 Shote—
 pox, studies, (40) 89.
 typhoid—
 objections to use of term, (33) 182, 285.
 relation to hog cholera, (32) 83, 378, 881.
 studies, (33) 680; (34) 82.
 Shot-hole borer—
 affecting loquats, (34) 361.
 affecting tea, (32) 852.
 digest of data, (38) 564.
 injurious to sal, (36) 360.
 notes, (26) 753, 759; (27) 755; (28) 555, 653; (29)
 158; (30) 657; (34) 361; (36) 258, 754, 853.
 occurrence in California, (30) 161.
 red-shouldered, notes, (38) 762.
 red-shouldered, on pecan, (38) 157; (39) 557.
 relation to pear bacterial blight, (26) 144.
 studies, (31) 852.
 Showers, midsummer, at Galveston, Texas, (29) 812.
 Shoyu, preparation, (32) 560.
 Shredded wheat—
 analyses, (32) 667.
 waste, analyses, (27) 872; (30) 68; (33) 371; (34)
 665; (35) 373.

Shrew—

new, from Nova Scotia, (37) 758.

new, from Oregon, (40) 351.

short-tailed, feeding habits, (32) 54.

Shrike, California, destruction of locusts by, (28) 351.

Shrimp—

analyses and use, (37) 863.

canned, tin salts in, (26) 66.

creatin and creatinin content, (31) 760.

preparation and shipping, (37) 863.

waste as fertilizer, (37) 863.

Shrub diseases, prevalence in Texas, (26) 645.

Shrub seeds, germination, (33) 343.

Shrubs—

acclimatization, (34) 231.

and trees for seaside planting, (40) 447.

trees, of central Europe, handbook, (30) 742.

trees on the farm, (40) 447.

trees, treatise, (30) 445.

annual growth of, (35) 841.

as affected by freezing, (28) 824.

as affected by tarred roads, (27) 30, 333.

assimilation and chlorophyll content of leaves, (28) 728.

at Belle Fourche experiment farm, (36) 143.

berry-bearing, for birds, (34) 238.

bibliography, (34) 238.

blooming dates for, (26) 237; (27) 240.

breeding and culture experiments, (38) 641.

Chinese, for Pacific slope and Gulf coast regions, (35) 450.

Chinese ornamental, notes, (32) 440.

culture, (31) 140; (36) 535.

culture—

and care, (34) 836.

experiments, (26) 237; (28) 147; (32) 542; (37) 241.

in California, (26) 47.

California, treatise, (33) 441.

western Nebraska, (29) 546; (32) 234.

evergreen, winter transpiration of, (31) 728.

for eastern Colorado, (37) 837.

home grounds, (34) 741; (39) 450.

Illinois, (28) 840; (34) 45.

Kansas, (35) 43.

latitude of St. Louis, (34) 439.

northern Minnesota, (37) 241.

ornamental plantings, (38) 45.

railway gardening, (35) 450.

southeastern Alaska, (34) 638.

Truckee-Carson reclamation project, (31) 835.

forcing experiments, (28) 837.

handbook, (26) 642; (27) 346.

hardy climbing, description, (35) 450.

hardy, for Maine, (35) 840.

hardy, of the British Isles, treatise, (32) 337.

indigenous to Australia, (26) 830.

insects affecting, (26) 654; (27) 346.

list of seeds, (28) 235.

new, in Kew Gardens, (31) 236.

new, of Philippines, (38) 247.

new or noteworthy, from Columbia and Central America, (34) 827.

of central Europe, (31) 538.

eastern United States, (37) 746.

Europe, encyclopedia, (31) 143.

Florida, handbook, (30) 445.

Konahuanui region, (34) 537.

Mexico, (27) 147.

Minnesota, manual, (28) 145.

Missouri River basin, (34) 838.

New Mexico, (29) 842.

North America, (33) 437.

Oahu lowlands, (34) 345.

Oklahoma, (29) 441.

Pacific coast, (34) 152.

Southern Circle of Central Provinces, (32) 144.

United States, treatise, (33) 437.

Wyoming, (38) 255.

ornamental—

adaptation and variety tests, (29) 41.

at Belle Fourche Experiment Farm, (33) 837.

at forest nursery in Rhodesia, (40) 641.

blooming dates, (34) 144.

breeding experiments, (29) 235.

causes affecting growth, (33) 49.

culture, (29) 148.

Shrubs—Continued.

ornamental—continued.

culture experiments, (29) 235; (32) 437.

culture in Alaska, (29) 743.

description, (35) 450.

destruction by Chinese cotton scale, (26) 556.

for Florida, (34) 535.

Kansas, (31) 536.

Oregon, (39) 241.

unfavorable city conditions, (33) 442.

insects affecting, (27) 453; (35) 756.

notes, (29) 395.

of Dade County, Florida, (31) 239.

of Hawaii, (37) 546.

selecting, (40) 640.

tests, (36) 443.

treatise, (37) 44.

varieties, (29) 235, 540; (36) 837.

periodicity and annual ring formation, (28) 340.

phenological data, (33) 825.

planting on dry farms, (28) 49.

propagation, (28) 840; (34) 533.

propagation and pruning, (30) 236.

propagation by cuttings, (40) 340.

pruning, (37) 242.

quarantine law in Missouri, (26) 854.

relation between root habit, ground water, and species distribution, (29) 136.

ripening of growing parts, (35) 542.

secondary growth phenomena, (28) 340.

transpiration in, (27) 522.

transplanting, (27) 491.

treatise, (26) 140; (28) 342; (29) 842; (34) 345.

varieties, (34) 231; (38) 142, 641.

water conductivity of wood, (40) 821.

winter injuries, (31) 49.

Shucks, ground, analyses, (34) 767.

Sialia n.s.p., description, (37) 846.

Sibine stimulea, see Saddle-back caterpillar.

Sibinia peruana n.s.p., description, (32) 658.

Sickness, effect on growth of the brain, (34) 662.

Siculades fulcata, notes, (30) 657.

Sida—

fiber, tests, (31) 526.

rhombifolia—

analyses, (34) 35.

analyses and valuation, (30) 138.

fiber, examination, (39) 442.

Sieves, cement, tests, (30) 888.

Sigalphus daci n.s.p., description, (26) 152.

Sigalphus spp., notes, (27) 564.

Sigaloesa n.s.p., notes, (35) 259.

Signiphora—

flavopalliatia occidentalis, notes, (35) 761.

giraulti n.s.p., description, (31) 554.

lutea n.s.p., description, (29) 359.

merceti n.s.p., description, (37) 360; (38) 460.

n. spp., descriptions, (31) 355.

nigrita, notes, (31) 356.

nigrita, parasitic on San José scale, (29) 758.

occidentalis, parasitic on orange scale, (26) 554.

pulchra, notes, (27) 556.

spp., notes, (28) 159.

thoreauini n.s.p., description, (35) 760.

Signiphorinae, monograph, (30) 759.

Silage—see also Alfalfa, Clover, etc.

analyses, (27) 170, 775; (28) 169, 463; (29) 270,

367; (30) 565; (31) 470; (32) 169, 465; (33) 469,

759; (35) 662; (36) 65; (38) 175, 376.

and alfalfa hay for beef production, (33) 373.

and cottonseed meal, associative digestibility,

(37) 65.

and silage fermentation, (36) 710.

bacteriology, (32) 363; (34) 766; (35) 769; (36)

611; (38) 379.

beet-top, inoculation with lactic-acid bacteria,

(34) 767.

cane-top, (35) 562.

changes in during storage, (30) 525.

composition and digestibility, (31) 467.

corn—

and bean, analyses, (39) 773.

soy bean, analyses, (33) 568.

soy beans, seeding, (40) 135.

sunflowers, yields, (40) 332, 431.

culture experiments, (40) 735.

varieties, (40) 733.

variety tests, (39) 333, 835.

yields, (39) 227, 336, 337; (40) 331.

Silage—Continued.

cost of production, (30) 333; (32) 527, 530; (33) 831; (35) 691; (36) 167.

crops—

culture experiments, (27) 638.
for cut-over lands, (39) 231.
dairy cows, (38) 174.
Kansas, (29) 575.
Nebraska, (40) 621.
Nevada, (39) 134.
Oklahoma, (31) 829.
western Washington, (38) 637.
notes, (34) 192.
production, (39) 737.
tests, (35) 337; (38) 630, 636.
varieties, (37) 533.
variety tests, (39) 33, 736; (40) 134, 330, 731.
yields in Australia, (38) 133.
determination of acidity in, (30) 415.
digestibility, (32) 668; (39) 475.
digestibility and productive value, (37) 865.
digestibility in mixed rations, (34) 169.

effect on—

butter, (39) 485.
concrete, (32) 590.
fetal development, (33) 266.
melting point of milk fat, (37) 74; (38) 682.
quality of Swiss cheese, (36) 876.
feeding, (30) 37; (31) 168; (33) 563; (34) 192.
feeding value, (39) 474, 475, 482, 775; (40) 666, 769.
fermentation, (36) 802; (38) 111, 772, 802.

fermentation—

heat production in, (37) 612.
in, (35) 9.
studies, (27) 204.
fermenting with lacto-pulp, (27) 170.
for beef cattle, (35) 663.
beef production, (28) 572; (29) 771.
breeding ewes, (31) 367.
dairy cows, (31) 673; (37) 75, 682.
fattening cattle, (31) 266.
fattening sheep, (35) 375.
horses, (35) 869; (38) 676.
horses and mules, (32) 670.
lambs, (29) 271.
sheep, (26) 570; (32) 261; (34) 171.
sheep and lambs, (29) 572.
steers, (28) 266; (29) 667; (31) 470; (33) 468.
summer feeding, (29) 473.

forage poisoning due to, (37) 689.

formation, chemical changes in, (32) 710.

from corn stover, (38) 802.

dry corn fodder, (29) 769.
dry shock corn, (32) 666.
native grasses, (28) 432.
oats and mixed grasses, (36) 436.
oats and tares, (35) 481.
pit silos, analyses, (32) 790.
Russian thistle, (38) 669.
soft corn ears, (34) 371.
sorghum refuse, analyses, (27) 170.
sweet potatoes, (39) 477, 482.
turnip leaves, notes, (27) 669.
various crops, acidity, (39) 310, 878.
various crops, feeding value, (39) 272.

frozen, effect on cattle, (26) 570.

handbook, (29) 87.

handling, (31) 891; (38) 390.

importance in southern beef production, (29) 69.
inoculation with lactic acid bacteria, (32) 364, 767; (33) 467; (35) 373.

lactic acid in, (29) 712.

making, (38) 95, 665.

making and feeding, (29) 869; (31) 72; (32) 168; (39) 269.

mannite in, (37) 801.

mannitol in, (39) 107.

manual, (32) 567.

measuring, (37) 887; (39) 834.

methods in Bavaria, (26) 666.

methods of treatment, (40) 116.

methyl alcohol in, (32) 410.

microorganisms in, (33) 224; (37) 728.

normal temperatures and factors influencing

quality, (35) 270.

notes, (27) 872; (28) 274, 581; (29) 689; (31) 72, 786; (32) 666; (34) 565; (38) 368; (40) 331.

nutritive value, (26) 360; (29) 270.

oat and pea, analyses, (34) 467, 667.

palatability, (37) 671.

Silage—Continued.

pathogenic anaerobe from, (38) 384.

pathogenic bacillus from, (39) 387.

phosphated, notes, (31) 422, 623.

physical changes during digestion, (39) 476.

preparation, (33) 467.

preservation, (28) 464.

preservation and ripening in warm climates, (40) 116.

rape, feeding value, (35) 768.

relation to forage poisoning, (39) 586.

review of investigations, (27) 170.

sorghum and cowpea, mineral constituents, (40) 769.

spoiling in metal silos, (32) 285.

stack, directions for making, (26) 468.

stack system, (29) 768.

stacking, (34) 565.

studies, (33) 274.

summary of data, (26) 393.

summer, v. soiling, (26) 574.

tests, (29) 633.

use, (26) 686; (27) 68.

use in Great Britain, (39) 269.

v. beets and mangels for milk production, (34) 670.

v. cotton-seed hulls for steers, (31) 469; (32) 260, 568.

v. soiling crops for dairy cows, (30) 874.

value and use, (34) 665.

variation in ether extract, (38) 413.

volatile aliphatic acids of, (28) 608, 609.

volatile fatty acids and alcohols in, (28) 109.

wheat, notes, (33) 337.

Silica—

absorption by oats, (31) 632.

as a plant food, (30) 27.

concentration in surface soil, (31) 720.

crucibles, marking, (26) 715.

determination, (35) 314.

distribution in loam soils, (31) 618.

extraction from feldspar, (28) 223.

from feldspar, (29) 518.

of feeding stuffs, digestibility, (40) 769.

plant, and sand, differentiating, (40) 610.

role in cereal nutrition, (32) 121.

role in plant nutrition, (26) 530.

solubility, (33) 310.

solution in underground waters, (28) 27.

Silicate rocks, potash from, (27) 628; (28) 33; (37) 427.

Silicates—

as a source of potash, (27) 724; (29) 215, 518, 822.

decomposition by bacteria, (29) 316.

decomposition by soil bacteria and yeast, (31) 121.

detection, (26) 311.

in milk from glass bottles, (27) 376.

v. carbonates as sources of lime and magnesia

for plants, (32) 622.

weathering, (28) 322; (29) 123.

Silicic acid—

determination in soils, (37) 505.

determination in water, (33) 711.

in lime, effect on soils, (26) 34.

in milk sterilized in bottles, (33) 675.

soluble, in phosphatic slag, (29) 409.

soluble, in Thomas slag powder, (30) 809.

Silicofluoric acid as wood preservative, (30) 646.

Silicon—

importance in animal nutrition, (31) 663.

nitrogen, fertilizing value, (31) 821.

Silk—

culture—

in British colonies and dependencies, (35) 358.

California, (30) 854.

India, (28) 736.

Indo-China, (30) 549.

Italy, (33) 858.

Philippines, (27) 659.

Yalung Valley, (29) 655.

notes, (39) 557.

treatise, (39) 560, 854.

eri, culture, (28) 657.

eri, notes, (27) 861.

fibers, use in chemical analysis, (38) 9.

Manchurian tussore, (38) 361.

moth, univoltin, development of eggs, (27) 456.

of spiders, use, (31) 452.

Silk—Continued.

- producers, lepidopterous, classification, (27) 456.
- production—
 - and manufacture in China, (38) 361.
 - in Manchuria, (28) 253.
 - 1913, (35) 56.
 - 1914, (36) 655.
 - 1915, (37) 463.

Silkworm—

- diseases, notes, (27) 456.
- eggs as affected by low temperature, (26) 452.
- jaundice, investigations, (28) 856.
- larvae, selection for flacherie resistance, (38) 860.
- muscardine, notes, (26) 757; (27) 456; (32) 63.
- pebrine, corpuscles in, (30) 549.
- pebrine, notes, (29) 762; (39) 255; (40) 652.
- pebrine, studies, (27) 762; (37) 361.

Silkworms—

- anatomy and physiology, (26) 556.
- bacillary septicemia of, (30) 53, 54.
- breeding experiments, (34) 552.
- composition at different stages, (31) 251.
- development of silk glands, (37) 158.
- dominant and recessive whites in, (31) 60.
- effect of chemicals on, (38) 460.
- embryology, (30) 456.
- experiments with, (32) 399.
- feeding on treated leaves, (39) 560.
- flacherie and polyhedral disease of, (32) 851.
- food plant for, (39) 258.
- genetic studies, (37) 158.
- grasserie in, (26) 149.
- identification, (36) 380.
- in India, (39) 862.
- in Madagascar and Réunion, (29) 855.
- life history and rearing, (37) 598.
- multivoltine hybrid races, (39) 158.
- of Africa, (26) 455.
- of Africa, agricultural importance, (32) 847.
- oviposition and parthenogenesis in, (36) 459.
- papers on, (27) 456.
- parasites of, (26) 882.
- parthenogenesis, (39) 659.
- rearing, (31) 850.

Silo—

- and water tank, combined construction, (30) 489.
- fillers, specifications, (37) 886.
- Mexican, description, (26) 188.
- roofs, concrete, construction, (30) 293.

Silos—

- and silage, booklet, (30) 670.
- and silage, notes, (29) 270; (30) 371; (31) 72; (32) 590; (33) 90, 691; (35) 690; (38) 368.
- asphyxiation in, (32) 678.
- burned clay block, construction, (30) 489.
- capacity, (37) 887.
- care of, (26) 91.
- cement, construction, (27) 89, 793, 898.
- cement stucco, construction, (27) 590.
- clay tile, construction, (26) 686.
- comparison of different types, (29) 489.
- concrete—
 - block, construction, (30) 487.
 - construction, (26) 91, 686; (32) 190; (34) 88, 488.
 - for cold climate, (38) 292.
 - forms for, (31) 590.
 - handbook, (26) 790.
 - pamphlet, (31) 892; (33) 892.
 - treatise, (35) 294.
- construction, (26) 393; (28) 291; (29) 593, 689; (30) 89; (31) 331, 591, 592, 786; (32) 86, 687; (34) 192, 892; (36) 167, 190, 288; (37) 591, 696, 789; (38) 190, 391.
- construction and filling, (31) 489; (39) 134.
- description, (26) 385; (31) 673.
- filling, (31) 891; (34) 138.
- for prairie farms, (35) 690.
- gas from, analyses, (32) 679.
- German types, description, (34) 565.
- Gurler, construction, (31) 786.
- Gurler, notes, (26) 91.
- handbook, (29) 87.
- hollow tile, construction, (35) 792.
- mechanical pressure, (39) 99.
- notes, (27) 68, 486, 872; (28) 581; (29) 473; (32) 86, 189, 285.

Silos—Continued.

- pit, construction, (32) 190; (36) 91; (37) 789.
- pit, construction and use, (32) 790.
- pit, for western Kansas, (30) 294.
- pit, semipit, and bank, construction, (37) 388.
- plastered, description, (26) 299.
- power for filling, (32) 590.
- sheep-feeding capacity, (32) 670.
- stave, construction, (29) 789; (34) 488; (36) 91.
- stave, notes, (26) 91.
- stone and brick, construction, (29) 489.
- summer, use, (30) 875.
- treatise, (30) 389.
- vitrified tile, construction, (32) 590.
- wooden hoop, construction, (31) 489; (32) 888; (37) 491; (38) 190.
- Silpha bituberosa*, studies, (37) 261.
- Silphium laciniatum*, transpiration in, (33) 29.
- Silt—
 - carried by streams of Alps and Pyrenees, (33) 718, 719; (34) 512.
 - determinations in Colorado River, (37) 486.
 - distribution in soils, (28) 28.
 - in the Rio Grande, (30) 418.
 - problem in irrigation, (32) 882.
- Silvanus*—
 - spp., notes, (34) 754.
 - surinamensis*, see Grain beetle, saw-toothed.
- Silver—
 - cleaning, electrolytic method, (36) 266, 865.
 - compounds, colloidal, effect on catalase, (26) 504.
 - fish, life history and parasites, (35) 657.
 - fish, notes, (33) 459; (38) 364.
 - leaf disease, notes, (30) 845; (40) 748.
 - leaf disease, studies, (34) 744; (39) 553.
 - metallic, effect on *Aspergillus niger*, (30) 824.
 - nitrate, effect on—
 - germinability of wheat, (34) 31.
 - germination of barley, (29) 629.
 - starch ferments, (27) 109.
 - nitrate emulsion, fungicidal value, (26) 346.
 - salts, effect on *Aspergillus niger*, (29) 554.
 - toxic effect on plants, (38) 628.
- Silvicultural experiments, methods of conducting, (27) 647.
- Silviculture—
 - American, handbook, (28) 343.
 - at International Congress of Agriculture, (30) 346.
 - in America, (35) 746.
 - Canada, (37) 45.
 - Costa Rica, (27) 147.
 - India, (37) 547; (39) 648.
 - southern Appalachians, (37) 45.
 - the Tropics, treatise, (28) 343.
 - manual, (31) 143.
 - review of investigations, (35) 346.
 - treatise, (35) 346.
- Silvonomy, treatise, (33) 541.
- Silybum marianum*, analyses, (33) 466.
- Simocephalus* spp., heredity in, (32) 448.
- Simodactylus cinnamomeus*—
 - investigations, (38) 163.
 - notes, (27) 656.
- Simplephytus pacificus*, notes, (32) 651.
- Simuliidae—
 - Brazilian, studies, (27) 57.
 - of northern Chile, (37) 460.
 - of northern Chile, description, (35) 258.
 - of Saskatchewan, (39) 661.
 - synopsis, (31) 254.
- Simulium—
 - dinellii, notes, (27) 560.
 - larvae, parasites, (27) 456; (29) 856; (30) 361.
 - maculatum, oviposition, (34) 554.
 - meridionale, see Turkey gnat.
 - n.s.p. from Texas, (34) 64.
 - n.spp., description, (28) 854; (35) 362.
 - n.spp. from tropical America, (34) 554.
 - natural enemies of, (31) 851.
 - nigritarsis, notes, (36) 359.
 - oviposition of Brazilian species, (29) 54.
 - problem in Illinois, (28) 560.
 - relation to pellagra, (31) 452.
 - reptans injurious to grazing animals, (35) 681.
 - review of literature, (30) 159.
 - spp., life history, (32) 82.
 - spp., notes, (28) 854; (29) 454.
 - spp., relation to pellagra, (27) 156; (28) 853.

- Simulium**—Continued.
 spp., studies, (34) 756.
tenuipes n.sp., description, (35) 258.
venustum, lesions produced by, (33) 156.
vittatum, relation to pellagra, (26) 656.
- Sinapis**—
alba, notes, (30) 145.
arvensis, dissemination by farm animals, (26) 539.
arvensis, genetic studies, (27) 533.
 oil, insecticidal and larvicidal value, (34) 359.
- Sinay** beans, effect on nitrogen content of soils, (31) 733.
- Sincamas**—
 culture in Philippines, (40) 231.
 effect on nitrogen content of soils, (31) 733.
- Sinea diadema**, feeding habits, (36) 253.
- Sinoxylon**—
basilare, see *Xylobiops basilaris*.
sudanicum, notes, (27) 54.
- Sipha flava**—
 attacking sugar cane, (38) 762.
 notes, (33) 452.
- Siphanta acuta**, notes, (31) 249.
- Siphocoryne**—
avenae, see *Grain aphid*, European.
 essigi new name, (39) 657.
- Siphona plusiae**, life history and anatomy, (33) 561.
- Siphonaptera**—
 new, of America, (36) 257.
 of Peru, (27) 862.
 studies, (33) 563.
- Siphonella funicola**, life history and habits, (38) 359.
- Siphonophora**—
leptadeniae n.sp., notes, (31) 755.
pisi, remedies, (34) 755.
rosae, notes, (28) 655.
- Siphons**—
 inverted, construction, (30) 85.
 inverted, frictional resistance in, (30) 885.
 use on farm, (27) 589.
- Sires**—see also *Bulls*.
 effect on dairy production, (35) 564; 570; (38) 476.
 futurity test, (38) 176.
 popular, in animal breeding, (34) 370.
 purebred, value, (38) 298.
 selection, (37) 473.
 value in improvement of herds, (37) 866.
- Siricidae** of North America, (29) 359.
- Sirup**—see also *specific kinds*.
 analyses, (34) 660; (35) 558.
 evaporator, description, (29) 833.
 for canning and preserving, (37) 15.
 making, (40) 830.
 methods of analysis, (38) 315.
 sources and composition, (37) 715.
 treating, (31) 117.
- Sirups**—
 for soda fountains, storage and care, (32) 356.
 frothy fermentation, (40) 615.
 table, food value, (29) 460.
 table, studies, (27) 766.
- Sisal**—
anthracnose, notes, (29) 346; (30) 845; (31) 641.
 binder twine from, (27) 534.
 culture—
 and manufacture, (30) 831.
 experiments, (30) 434; (37) 734.
 in Antigua, (38) 336.
 in England and German East Africa, (31) 333.
 in Philippines, (30) 229.
 date of cutting test, (27) 234.
 disease, notes, (37) 453.
 fertilizer experiments, (31) 421.
 fiber from, (33) 530.
 fiber, strength of, (29) 313.
 fiber, tests, (31) 526.
 hemp, culture, (39) 100.
 hemp, Rhodesian, (39) 442.
 industry in Hawaii, (27) 717; (29) 208; (40) 336.
 lactic acid in, (29) 615.
 leaf disease, notes, (34) 442.
 leaf spot disease, (36) 348.
 leaves, composition, (27) 718.
 standard grades, (36) 634.
 varieties, (30) 434.
 waste, analyses and fertilizing value, (26) 126.
 waste, utilization, (27) 717.
- Sisalanæ** of West Indies, (38) 529.
- Siskin**, pine, destruction of grain aphids by, (29) 452.
- Sisymbrium nasturtium-aquaticum**, culture for wild ducks, (33) 251.
- Sitka spruce beetle**, notes, (32) 552.
- Sitodrepa panicea**, notes, (26) 453; (33) 253; (37) 156.
- Sitona**—
apacheana, notes, (35) 364.
humeralis, morphology and biology, (32) 453.
lineata, biology, (34) 65.
lineata, notes, (40) 358.
- Sitones hispidulus**—
 affecting alfalfa, (32) 851.
 in California, (37) 568.
 notes, (32) 650; (39) 358.
- Sitotroga cerealella**, see *Angoumois grain moth*.
- Sixeonotus luteiceps**, notes, (28) 451.
- Skagit River basin**, Washington, profile survey, (36) 582.
- Skim milk**—
 analyses, (26) 80, 171, 770; (28) 178; (29) 471.
 analyses and use, (26) 477.
 and starch for calves, (36) 370.
 and tankage for pigs, (32) 862.
 as human food, (36) 362, 663; (37) 669.
 ash analyses, (29) 861.
 beverage from, (33) 278.
 boiled, nutritive value, (33) 163.
 casein from, (39) 386.
 cheese from, (30) 878; (37) 576.
 composition in relation to fat content of whole milk, (36) 375.
 detection, (33) 714, 715.
 digestibility, (32) 768; (37) 673.
 dried casein from, (29) 676.
 dried, use in bread making, (28) 458.
 factors affecting fat content, (33) 383.
 feeding value, (40) 75, 273, 279.
 for calves, (29) 668; (31) 75; (33) 268, 269, 374; (34) 774; (36) 565.
 chicks, (39) 780.
 corn-fed pigs, (38) 474.
 egg production, (38) 373.
 infants, (36) 558.
 laying hens, (35) 479; (39) 176; (40) 76, 773.
 pigs, (26) 571; (32) 170, 464; (33) 762.
 heated v. unheated, for pigs, (32) 569.
 metallic flavor in, (35) 277.
 methods of analysis, (31) 114.
 nutritive value, (31) 161; (35) 663.
 pasteurization, (34) 673.
 pasteurization for calves, (36) 877.
 powder, efficiency for milk production, (36) 872.
 powder, heated, nutritive value, (34) 369.
 powder protein for milk production, (36) 671.
 powdered, analyses, (38) 804.
 relation to tuberculosis in pigs, (26) 181.
 sour, for chicks, (32) 570.
 specific heat, (32) 715.
 standards, (29) 777.
 substitutes for calves, (26) 367.
 testing, (29) 879; (30) 875.
 testing for fat, (39) 182; (40) 378.
 use in the diet, (36) 763.
 utilization, (26) 779.
 utilization, treatise, (27) 75.
 variations in composition, (36) 374.
- Skin**—
 biology of, (30) 201.
 disease of cattle in Antigua, (34) 478.
 diseases, relation to diet, (31) 463.
 maggot of man, notes, (31) 551.
 reactions, anaphylactic, (38) 580.
 reactions in relation to immunity, (36) 382.
 secretions, pigments of, (31) 274.
 sterilization, (40) 285.
- Skins**—see also *Hides*.
 and hides, book, (27) 775.
 anthrax infection from, (26) 781.
 from China, disinfection, (35) 487.
 subcutaneous matter as cattle feed, (37) 171.
 tanned, identification, (28) 713.
 tanning and dressing, treatise, (38) 13.
- Skuas**, North American, distribution and migration, (34) 158.
- Skulls of**—
Japanese Bovidæ, (26) 472.
Japanese cattle, (40) 276.
 wild and domestic animals (27) 467.

- Skunk farming, notes, (34) 269, 873.**
Skunks—
 breeding for fur, (29) 672.
 economic value, (31) 370.
 food habits, (33) 152.
 Sky, blue color of, (35) 618.
 Sky light, polarization, (30) 317; (38) 812.
 Sky polarization, changes in neutral points, (27) 316.
Slag—see also Phosphatic slag.
 analyses, (28) 326.
 concrete, blast-furnace, tests, (39) 87.
 methods of analysis, (29) 795.
 solubility in weak organic acids, (40) 709.
 use in manufacture of fertilizers, (29) 25.
Slaughter—
 establishments in Netherlands, (28) 669.
 tests, significance in animal breeding, (28) 271.
Slaughterhouse offal, feeding value, (34) 866.
Slaughterhouses—
 butchers' goods manufactories for, (32) 457.
 construction, (34) 767.
 handbook, (31) 166.
 humane methods in, (39) 583.
 in Great Britain, France, Germany, and Netherlands, (30) 276.
 inspection, (31) 359, 658; (32) 162, 567.
 inspection in—
 German Empire, (31) 760.
 Massachusetts, (33) 260.
 Montana, (33) 67.
 New Jersey, (32) 357.
 Pennsylvania, (27) 475.
 Utah, (33) 165.
 Virginia, (29) 766; (32) 661; (36) 63.
 municipal—
 advantages of, (30) 60.
 bibliography, (36) 762.
 construction and operation, (37) 91.
 descriptions, (27) 167.
 plans and specifications, (27) 167.
Slaughtering industry in United States, (31) 64.
Slav farmers in Connecticut, (31) 93.
Slavs on southern farms, (32) 489.
Sleeping sickness, transmission by blood-sucking insects, (26) 150.
Sleet—
 American definition, (35) 618.
 forecasting, (35) 805.
 storm in northern New York, (29) 510.
Slime, formation in soils, (29) 723.
Slime mold, effect on crucifers, (33) 648.
Slingerland, M. V., writings of, (32) 56.
Slop, dried, analyses, (26) 165; (29) 311.
Sludge—see also Sewage.
 activated—
 analyses and fertilizing value, (34) 520.
 experiments, (40) 336.
 fertilizing value, (38) 120.
 analyses, (35) 128.
 fertilizing value, (28) 734.
 fresh and decomposed, comparison, (29) 625.
 from paper mills, utilization, (33) 520.
 Imhoff-tank, fertilizing value, (40) 323.
 utilization, (29) 625; (33) 24.
Slugs—
 feeding habits, (34) 458.
 injurious to field and garden crops, (26) 658.
 remedies, (32) 246.
Sluice gates, power required in operating, (36) 682.
Small holdings—see also Land settlements and Land tenancy.
 system in British Isles, (40) 889.
Smallpox—
 complement fixation in, (34) 877; (40) 584.
 in pigs, (34) 275.
 vaccines for, (26) 676.
Smartweed, analyses, (32) 169.
Smegma bacillus, metabolism of, (33) 771.
Smelter—
 fumes, effect on plants, (28) 623; (31) 322; (34) 526; (35) 28, 213, 244.
 gases, effect on insects, (38) 458.
 gases, effect on pines, (27) 154.
 smoke injury in southeastern Tennessee, (31) 146.
 wastes, effect on barley, (37) 526.
 wastes, fertilizing value, (32) 199.
Smicra bergi, notes, (27) 559.
- Smilax—**
 root borer, notes, (28) 854.
 rotundifolia, fruit of, (36) 502.
Smilacaceae, economic importance, (30) 753.
Smith, J. B.—
 biographical sketch, (26) 403.
 writings of, (29) 353.
Smithing and forging, handbook, (36) 287.
Smoke—
 abatement in Great Britain, (35) 620.
 acids in rain water, (32) 422.
 and daylight intensities, (37) 807.
 as source of atmospheric pollution, (34) 715.
 cloud and high haze of 1916, (37) 115.
 damage caused by, (28) 811.
 effect on—
 fruits, (27) 831.
 plant growth, (29) 422; (33) 126, 127, 428, 629; (39) 630.
 pines, (31) 730.
 rest period in plants, (35) 436.
 soil acidity, (31) 521.
 soils and vegetation, (27) 229.
 vegetation, (26) 38; (30) 32, 131, 432; (31) 34, 626, 826; (35) 620; (38) 28.
 from lead works, effect on horses, (34) 278.
 from Mt. Hood, (34) 414.
 handbook, (27) 212.
 injury—
 in forests, studies, (35) 436.
 in Selby smelter zone, (37) 634.
 investigations, defects in, (35) 133.
 to agriculture and forestry in Austria, (37) 528.
 to plants, (32) 524, 729; (34) 744.
 leaf injury or loss due to, (35) 243.
 pollution, plants as an index, (34) 299; (37) 130.
 problem, meteorological aspect, (31) 213; (32) 117.
 relation to grape mildew, (28) 152.
 toxicity toward plants, (29) 131, 529.
Smokehouse—
 description, (38) 476.
 for fish, construction, (37) 716.
Smokehouses—
 construction, (28) 466.
 for prairie farms, (35) 690.
Smudging, cost of, (29) 339.
Smut—see also Cereal and Grain smut and specific hosts.
 blossom infection and distribution, (28) 149.
 cereal, spore germinations of, (31) 642.
 dissemination by threshing machines, (31) 148.
 fungi—
 notes, (26) 746.
 of Switzerland, (26) 645.
 parasitism, (31) 540.
 spore formation in, (28) 745.
 treatise, (27) 746.
 of grain and forage crops, (35) 348.
 spores, determination in flour, bran, and cereals, (36) 146.
 spores, determination in wheat bran, (27) 310.
 treatment, (27) 132, 149; (30) 136, 241, 697; (35) 46.
Smuts—
 from New Mexico, (39) 147.
 of cultivated plants, cause and treatment, (30) 47.
 of Great Britain, treatise, (30) 745.
Smynthurus—
 arvalis, notes, (28) 158.
 sp. injurious to truck crops, (32) 353.
Snails—
 as blister rust carriers, (39) 248.
 edible, (33) 274.
 fresh and canned, production and marketing, (31) 656.
 trematodes affecting, (33) 863.
Snake River basin—
 hydrography, (32) 279.
 profile survey, (36) 583.
Snake venoms, notes, (26) 676.
Snakeroot—
 toxicity, (38) 685, 883.
 white, as cause of trembles, (37) 583; (39) 489.
 white, toxicity, (37) 195; (40) 681.
Snakes—
 destruction of field mice by, (34) 751.
 experiments with, (29) 476.
 wounds and diseases, (40) 55.

- Snapdragon**—
disease in Barbados, (34) 841.
rust, control, (40) 155.
rust, new, description, (33) 248.
rust, notes, (38) 546.
Verticillium wilt, studies, (33) 244.
- Snappers**, hybridization experiments, (30) 329.
- Sneezeweed**, western, description, (39) 386.
- Snipe**, dying around Great Salt Lake, (33) 251.
- Snomish River basin**, hydrography, (32) 588.
- Snout beetles**—
destruction by white fungus, (26) 454.
destructive to apples, (26) 759.
- Snow**—
Boy as an insecticide, (36) 753.
chlorin content, (30) 815.
conservation, (27) 617; (28) 414, 514.
conservation by pine forests, (33) 319.
determination of density, (34) 510.
disappearance in high Sierra Nevada of California, (35) 419.
effect on—
atmospheric temperature, (31) 511.
soil temperature, (30) 122.
wintering of cereals, (26) 733.
evaporation from, (31) 213.
fertilizing value, (27) 317; (29) 209; (32) 419; (33) 716; (36) 19; (38) 619.
forecasting, (35) 808.
injury to trees, (36) 448.
limits in different climates, (27) 510.
measurement, (40) 715.
melting as affected by forests, (31) 716.
nitrogen, chlorin, and sulphates in, (34) 615; (38) 416.
nitrogen content, (30) 211, 815; (32) 120, 615, 616; (40) 724, 809.
of South Polar region, ammonia content, (26) 515.
relation to forests, (29) 814.
relation to irrigation and forestry, (29) 813.
retention, relation to forest cover, (36) 143.
sampler and weigher, description, (31) 510.
slides and slips, (27) 616.
slides from mountain slopes, (27) 414.
studies in United States, (31) 510.
substances dissolved in, (40) 19.
sulphuric acid content, (40) 314.
surface, condensation upon and evaporation from, (34) 413.
surface, evaporation from, (38) 209.
survey on Cottonwood Creek, Idaho, (34) 614.
surveys, (35) 420, 506, 619.
surveys—
for predicting stream flow, (29) 314.
in Nevada, (29) 510; (38) 416.
in Utah, (27) 616; (29) 721.
methods and cost of making, (36) 87.
value in irrigation projects, (27) 510.
value to the farmer, (38) 416.
- Snowballs** for lawn planting, (39) 244.
- Snowbirds**, destruction of grain aphids by, (29) 453.
- Snowdrops**, carbohydrates of, studies, (27) 427.
- Snowfall**—
abnormal, at Springfield, Mo., (27) 413.
artificial, in a train shed, (31) 213.
greatest in United States, (33) 716.
in California, (33) 716.
Canada, (36) 617.
Carson, Walker, and Truckee watersheds, (36) 719.
Columbia River Basin, (29) 510.
eastern United States, (32) 25; (33) 118.
Great Lakes region, (30) 815.
New England, (37) 16, 807.
1913-14, (32) 810.
Utah, (27) 413.
measurement, (27) 617; (29) 121, 510; (31) 213; (33) 776.
relation to water supply, (37) 16.
- Snowflakes**, gigantic, (33) 118.
- Snowstorm** in Ohio, W. Va., and Pa., (30) 713.
- Snuff**, analyses, (29) 866.
- Snuff**, use, (31) 658.
- Soap**—
analyses, (33) 753.
bark, use, (32) 456.
detection in ethyl alcohol, (29) 312.
- Soap**—Continued.
determination of water in, (39) 716.
effect on settling of arsenicals, (26) 354.
effect on solubility of lead arsenate, (31) 409.
examination, (31) 359.
from soy beans, (30) 614.
glycerin determination in, (40) 804.
grease, preparation, (35) 317.
hard, for oil emulsions, (39) 59.
household tests for, (31) 462.
lyes, glycerol determination in, (40) 712.
making, (38) 867.
method of analysis, (40) 311.
methods of examination, (29) 811.
mixing with lead arsenate sprays, (38) 258.
mixtures, preparation, (27) 356.
nut tree, epiphytes on, (28) 852.
solutions, analyses, (27) 441; (34) 661.
sprays, wetting power and efficiency, (36) 455.
use with Burgundy mixture, (40) 746.
use with nicotine sprays, (40) 752.
- Soapweed**—
as emergency forage, (39) 772.
as feeding stuff, (40) 277, 471.
as silage crop, (38) 471.
- Social**—
center work, bibliography, (31) 598.
centers in Kansas, (33) 694.
centers in the Southwest, (27) 796.
improvement clubs in Kansas, (26) 297.
life in the country, (31) 788.
survey—
for rural communities, (31) 294.
in Kentucky, (38) 694.
Missouri, (27) 390.
northeastern Minnesota, (33) 786.
Red River Valley, Minnesota, (33) 593.
rural communities, (26) 687.
southern Minnesota, (29) 489.
Walworth County, Wisconsin, (33) 394.
welfare in United States, (34) 791.
- Society**—
for Horticultural Science, proceedings, (28) 639; (29) 40.
for Promotion of Agricultural Science, (26) 1, 195; (28) 196; (30) 97; (32) 8, 95; (36) 297; (37) 601, 899; (39) 701; (40) 299, 300.
for Promotion of Plant Breeding in Germany, (30) 525.
of American Bacteriologists, (26) 575.
of American Foresters, (26) 51.
- Sociology**, rural, outline for study, (30) 795.
- Sod**, dryland, time for breaking, (36) 132.
- Sod oil**, insecticidal value, (34) 359.
- Soda**—
caustic, *see* Sodium hydrate and Sodium hydroxide.
cellulose, notes, (34) 714.
distribution in loam soils, (31) 618.
formation in soils, (36) 725.
fountain equipment, care and cleaning, (32) 356.
in loess soils, (35) 809.
lime, history and uses, (34) 804.
loss in drainage water, (26) 422.
pulp, cooking, (36) 17.
replacement of potash by, as a fertilizer for sugar beets, (32) 230, 324.
replacement of potash by in microcline, (30) 126.
sulphur dips, methods of analysis, (40) 208.
use against gooseberry mildew, (36) 646.
water, examination, (26) 660.
water, hygienic, notes, (32) 356.
water sirups, examination, (26) 660.
- Sodium**—
acetate for ruminants, (32) 667.
acetate, preservation of complement by, (39) 584.
acid phthalate in acidimetry and alkalimetry, (34) 408.
ammonium sulphate, fertilizing value, (35) 126, 518.
arsenate—
kerosene emulsion, insecticidal value, (34) 652.
methods of analysis, (28) 507.
oxidation in dipping fluids, (38) 585.
tick-killing properties, (29) 680, 886.
toxicity, (29) 586.

Sodium—Continued.

- arsenite—
 - destruction of weeds by, (29) 748.
 - effect on soils, (33) 623; (34) 421.
 - for weed control, (32) 138, 741; (40) 430.
 - killing of ringbarked trees with, (34) 485.
 - oxidation in dipping tanks, (29) 585.
 - toxicity, (29) 585.
- aspartate, assimilation by plants, (26) 32.
- benzoate—
 - as food preservative, (28) 261; (30) 364.
 - determination in catsup, (26) 111; (27) 809.
 - effect on the animal organism, (32) 164.
 - notes, (29) 865.
 - physiological effect, (27) 365.
 - toxicity, (28) 661.
 - toxicity in the diet, (35) 473.
- bicarbonate—
 - effect on baking quality of flour, (26) 356.
 - effect on hemolytic reaction, (36) 878.
 - effect on vitamin content of bread, (36) 465.
 - in artesian water of Virginia, (29) 512.
- bisulphate, use in manufacture of phosphatic fertilizers, (29) 319, 418.
- bisulphite, method of analysis, (39) 413.
- borate, effect on sugar beets, (31) 233.
- carbonate, effect on—
 - availability of soil potash, (32) 126.
 - blood sugar content, (37) 64.
 - germination of dodder, (27) 28.
 - germination of seeds, (29) 328.
 - nitrification, (27) 124.
 - plant growth, (27) 500; (28) 29.
 - soil bacteria, (26) 322.
 - solubility of iron phosphate, (37) 324.
- carbonate—
 - fertilizing value, (39) 117.
 - formation in calcareous soils, (38) 18.
 - formation in soils, (28) 516, 719.
 - in soils, (39) 323.
 - neutralizing cream with, (38) 281.
 - solutions, effect on saccharin substances, (26) 307.
 - toxicity towards barley, (33) 323.
 - use in Indian rape-seed cake, (26) 468.
- chlorid, *see* Salt.
- citrate—
 - action in the body, (36) 467.
 - effect on starch ferments, (27) 109.
 - prevention of milk curdling by, (31) 710.
 - toxicity as affected by diet, (40) 465.
- compounds, effect on baking quality of flour (30) 555.
- compounds, fertilizing value, (39) 117.
- content of muscles, (26) 566.
- cyanid—
 - as fumigant for nursery stock, (38) 357.
 - as insecticide, (26) 153.
 - as soil fumigant, (32) 246; (38) 457.
 - industrial synthesis, (32) 116.
 - production from sugar beets, (26) 613.
 - toxicity to plants, (39) 224.
- determination, (29) 807.
- determination in foods, (29) 809.
- determination in vegetable ash, (38) 311.
- dichromate for liberation of formaldehyde gas from water solutions, (33) 12.
- effect on hydration and growth, (40) 818.
- estimation, (39) 413.
- fertilizers, effect on sugar content of plants, (27) 500.
- fertilizers, time of application, (27) 125.
- fluorid—
 - antiseptic value, (40) 779.
 - as milk preservative, (32) 576.
 - effect on animal body, (32) 80.
 - insecticidal value, (34) 252; (39) 762.
 - sterilization of soils by, (32) 816.
 - use against ants, (36) 555.
 - use against roaches, (27) 55.
- hydrate—
 - and sulphur dip, preparation, (30) 783.
 - effect on permeability, (34) 429.
 - fertilizing value, (39) 117.
- hydroxid as disinfectant for hides and skins, (35) 882.

Sodium—Continued.

- p*-hydroxyphenylarsionate, preparation, (40) 609.
- hypo-iodite, neutral, action on formaldehyde, (34) 11.
- importance in animal nutrition, (31) 663.
- iodate for poisoning flies, (40) 859.
- iodid, effect on the circulation, (40) 274.
- lamp for polariscope, (34) 804.
- malate, action in the body, (36) 468.
- manures, effect on sugar content of plants, (28) 34.
- nitrate—
 - action as affected by distribution in soils, (35) 518.
 - after effects, (29) 127.
 - analyses, (28) 326; (39) 222.
 - application, (30) 623; (38) 624.
 - application at different depths, (29) 126.
 - application to winter grains, (33) 125.
 - as feed for dogs and pigs, (31) 265.
 - rice fertilizer, (31) 127.
 - spray for fruit trees, (36) 535.
 - top dressing for beets, (32) 323.
 - top dressing for grains, (37) 29.
 - top dressing for wheat, (37) 238.
 - winter spray for fruits, (30) 640; (31) 338.
 - availability, (39) 817.
- nitrate, availability—
 - as affected by composition of soil, (32) 516.
 - as affected by soils, (39) 726.
 - in relation to soils, (34) 130.
 - in soils, (36) 819.
 - of nitrogen in, (26) 523; (35) 123, 426.
- nitrate—
 - behavior in cultivated soils, (28) 521.
 - destruction of weeds by, (26) 333.
 - drilling v. broadcasting, (31) 123.
 - effect of long-continued use, (32) 121.
- nitrate, effect on—
 - action of phosphates, (35) 326.
 - ammonification, (28) 724.
 - apples, (31) 338.
 - asparagus roots, (28) 236.
 - availability of soil potash, (32) 126.
 - burning quality of tobacco, (38) 140.
 - carnations, (36) 445.
 - coherence of soils, (31) 123.
 - composition of beets, (31) 737.
 - composition of cereals, (37) 827.
 - composition of meadow hay, (34) 620.
 - composition of wheat, (38) 518.
 - cranberries, (30) 143.
 - decomposition of feldspar, (30) 126.
 - decomposition of soy bean fodder, (40) 214.
 - disease susceptibility in cereals, (29) 844.
 - flow of rubber latex, (29) 748.
 - flower size of tobacco, (33) 435.
 - germinating plants, (33) 128.
 - germination of dodder, (27) 28.
 - germination of seeds, (29) 328.
 - grass lands, (30) 133.
 - hydrogen-ion concentration in soils, (39) 425.
 - keeping quality of fruit, (27) 644.
 - legume inoculation, (40) 215.
 - lime requirement of soils, (28) 122.
 - maturity of cotton, (31) 40.
 - mechanical condition of fertilizers, (26) 33.
 - nitrogen-assimilating bacteria, (38) 724.
 - nitrogen content of asparagus roots, (26) 45.
 - nitrogen content of soil, (38) 213.
 - nitrogen transformations in soils, (38) 723.
 - nodule formation, (37) 133.
 - peaches, (33) 840.
 - protein content of soy beans, (34) 141.
 - quality of sugar beets, (28) 44.
 - resistance of grain to hail, (30) 519.
 - soil acidity, (28) 137; (37) 23; (38) 620.
 - soils, (27) 622; (28) 520; (29) 417; (30) 220; (35) 516; (36) 118.
 - sugar beets, (26) 332; (33) 434.
 - tobacco, (33) 732.
 - wheat, (36) 197; (37) 799; (38) 438; (40) 244.
 - wheat yield, (33) 217.

Sodium—Continued.

nitrate—

fertilizing value, (26) 39, 42, 125, 233, 324, 329, 425, 534, 536, 537, 630, 635, 725, 837; (27) 24, 32, 137, 218, 325, 337, 338, 436, 519, 530, 531, 534, 626, 639, 724, 832, 833, 837; (28) 431, 521, 723, 724, 725, 737, 827, 832; (29) 23, 125, 213, 331, 632, 727, 735, 736, 829, 831; (30) 25, 125, 324, 427, 529, 626, 632, 637, 638, 639, 820, 822, 835, 839; (31) 36, 37, 41, 124, 137, 517, 518, 725, 820, 821, 822, 829; (32) 323, 336, 516, 532, 630, 831, 832; (33) 33, 219, 829; (34) 22, 24, 25, 128, 129, 518, 520, 622, 820; (35) 22, 30, 125, 126, 218, 323, 325, 336, 427, 518, 519, 535, 629; (36) 121, 332, 338, 425, 626, 818, 833; (37) 123, 229, 426, 521, 539, 540, 627, 636, 729, 733; (38) 212, 218, 220, 229, 233, 244, 422, 438, 517, 624, 816, 825; (39) 21, 32, 242, 327, 334, 428, 434, 438, 445, 446, 529, 530, 537, 623, 817; (40) 125, 126.

fertilizing value as affected by lime, (34) 132.

for alfalfa, (37) 34.

apples, (35) 540; (37) 42.

arid soils, (36) 726.

asparagus, (28) 339; (36) 138.

carnations, (27) 844; (40) 741.

coffee, (40) 43.

corn, (31) 831; (32) 732.

corn in the South, (40) 422.

cranberries, (31) 741; (34) 150, 341.

early vegetables, (34) 532.

grass lands, (33) 527.

mangels, (29) 830.

moor soils, (40) 230, 822.

oats, (31) 528.

orchards, (36) 41.

pastures, (36) 735.

pineapples, (38) 748.

potatoes and sugar beets, (31) 833.

prunes, (40) 741.

rubber trees, (26) 339.

sweet potatoes, (31) 437.

history and manufacture, (34) 423.

industry and commerce, (35) 428.

industry in Austria-Hungary, (33) 822.

inoculation of alfalfa with, (26) 535.

loss from soils, (29) 211.

manufacture, progress in, (29) 730.

nitrification in soils, (39) 814.

production and use, (27) 327; (28) 625, 626;

(29) 126, 213, 517; (30) 126; (32) 425, 516,

517; (33) 218, 219.

production in 1913, (31) 725.

production in 1915-16, (37) 523.

residual effects, (31) 319.

sale and distribution, (38) 625.

secondary and subsidiary effects, (30) 26.

situation in 1917, (39) 218, 824.

time of application, (32) 132.

trade in, (31) 29.

use, (27) 421.

use against grape chlorosis, (27) 850.

use against mosses, (29) 741.

use in fertilizers, (27) 723.

use on peat soils, (37) 134, 135; (38) 132, 433.

v. ammonium sulphate for sugar beets,

(31) 422.

v. cottonseed meal, (40) 516.

v. dried blood for cotton, (31) 630.

nitrite—

fertilizing value, (31) 518.

oxidation, (39) 619.

nucleinate—

assimilation by ruminants, (31) 71.

effect on coagulation of blood and milk, (33)

177.

importance in the animal organism, (33)

758.

oxalate—

for standardizing potassium permanganate,

(31) 501.

toxicity as affected by diet, (40) 465.

parastungate, use in determination of carbon

dioxid and nitrogen pentoxid, (26) 708.

phosphate—

effect on germination of seeds, (29) 328.

fertilizing value, (32) 518; (39) 127.

Sodium—Continued.

pyrophosphate, toxicity, (34) 476.

removal from soil, (39) 517.

requirements of plants, (28) 730.

role in plant nutrition, (40) 424.

salicylate—

as a fly poison, (37) 53.

effect on metabolism in man, (35) 369.

toxicity, (28) 661.

salts—

antiseptic and germicidal value, (37) 176.

as wood preservatives, (32) 841.

salts, effect on—

activity of lipase, (31) 264.

ammonia fixing power of soils, (27) 323.

Aspergillus niger, (28) 824.

catalase, (26) 504.

composition of plants, (29) 419.

concrete, (29) 891.

germination and growth of crops, (34) 125.

growth of rice, (30) 833.

nitric-nitrogen accumulation, (40) 722.

physical properties of soil, (39) 215.

plants, (29) 625; (32) 538; (35) 816.

soil colloids, (35) 622.

wheat seedlings, (36) 431.

salts—

equilibria in solutions, (39) 203, 204.

fertilizing value, (28) 819; (30) 627.

floculating power on clay, (27) 620.

fractional crystallization, (39) 204.

in soil, antagonistic agents, (39) 619.

production, (35) 24.

therapeutic value, (38) 585.

salts, toxicity—

in soil, (36) 515.

soil factors affecting, (40) 315.

toward nitrogen-fixing organisms, (28) 519.

silicate as an egg preservative, (28) 359; (32) 870.

silicate, fertilizing value, (27) 628; (31) 31.

sozioidolate, use against spirochetosis in fowls,

(29) 484.

sulphate as preservative for immune serums and

antigens, (26) 83.

sulphate, effect on—

carnations, (36) 446.

germination of seeds, (29) 328.

nitrification, (27) 124.

plant growth, (30) 31.

soil bacteria, (26) 322.

soil potash, (36) 625.

solubility of phosphates, (28) 818.

sulphate—

fertilizing value, (27) 125; (39) 117.

toxicity toward barley, (33) 323.

sulphid, effect on cement, (38) 691.

sulphite, physiological action, (29) 269.

sulphocyanate, use against tuberculosis, (33)

877.

sulphur mixture, insecticidal value, (34) 60.

tartrate, toxicity as affected by diet, (40) 285,

465.

tellurite as test for viability of tubercle bacilli,

(33) 877.

thiosulphate, assimilation by yeast and mold

fungi, (29) 29, 30.

thiosulphate, fertilizing value, (29) 521.

toxicity toward plants, (30) 128.

tungstate, effect on plant growth, (35) 434.

v. potash for sugar beets, (33) 135.

Soft drink—

bottlers, sanitary code for, (32) 561.

establishments, sanitary control, (36) 562.

Soft drinks—

examination, (34) 166.

sugar substitutes in, (40) 68.

use of second-hand kegs for, (34) 256.

Softwood lumber industry in Middle West (38)

847.

Soil—

abrasion by storms in Russia, (38) 145.

acidity—see also Soils, acid, and Liming.

aluminum as factor in, (40) 125.

as affected by ammonium sulphate, (37)

815.

affected by drainage, (40) 22.

affected by fertilizers, (29) 238.

affected by moisture, (40) 316.

Soil—Continued.

acidity—continued.

- as affected by organic matter, (37) 718.
- affected by sulphur, (31) 727.
- blast-furnace slag for, (36) 728.
- cause, (37) 623, 624.
- cause and detection, (34) 419.
- cause and nature, (35) 722.
- correcting, (26) 723; (35) 727; (36) 429, 519; (38) 819.
- determination, (30) 715; (31) 112; (32) 30, 610; (33) 206; (34) 609; (35) 23, 503; (36) 117, 210, 505; (38) 419, 720; (40) 213.

acidity, effect on—

- availability of ammonium sulphate, (37) 521.
- grasses, (37) 446; (40) 125.
- nitrogen-assimilating bacteria, (39) 722, 723.
- vetch and oats, (40) 134.

acidity

- experiments, (35) 324.
- limestone action on, (40) 423.
- litmus-paper test, (39) 515.
- measuring by sugar inversion, (40) 123.
- nature, (40) 123.
- neutralizing, (32) 812; (37) 815; (40) 125, 815.
- notes, (29) 623, 816; (31) 322; (35) 120; (38) 298.

acidity, relation to—

- green manuring, (38) 20; (39) 216, 326, 424.
- growth of orchids, (40) 812.
- lime and potash content, (40) 812.
- mold action, (40) 319.
- plant cover, (27) 29.
- plant growth, (39) 513; (40) 324.

- acidity, studies, (26) 813; (28) 708; (29) 815; (31) 618; (32) 29, 212; (36) 813; (37) 24, 118; (38) 20, 511; (39) 514, 620; (40) 319, 620.

air—

- carbon dioxide content, (28) 320; (39) 516.
- composition, (40) 619.
- notes, (33) 618; (34) 514.
- movement, (26) 619.

aldehydes, studies, (40) 22.

alkalinity, relation to plant chlorosis, (31) 50.

amendments, effect on soil acidity, (37) 23.

analysis—

- as guide to fertilizer needs, (31) 217; (35) 215.
- by means of the plant, (32) 121.
- clod method, (28) 717.
- error in, (29) 316; (30) 505.
- mechanical, (26) 219, 221; (27) 119; (28) 515, 620; (30) 213; (31) 418; (32) 120.

analysis, mechanical—

- methods, (26) 29; (28) 318; (35) 721; (36) 114, 720; (38) 313.
- relation to moisture equivalent, (39) 214.
- shaker for, (32) 611.
- value, (27) 120.

- analysis, methods of, (27) 514, 515; (28) 111; (29) 308; (30) 12, 215, 624; (31) 312, 417, 514, 719, 806; (32) 295, 311; (33) 204, 205; (34) 806; (36) 204, 299, 318, 612; (39) 204.

antiseptics, tests, (28) 538.

bacteria—

- action of microorganisms on, (39) 332.
- action of toluene and chloroform on, (36) 815.
- activity, (29) 20, 123, 817; (30) 217, 718; (31) 126.

bacteria, activity as affected by—

- osmotic pressure, (40) 722.
- plants, (40) 299, 513.
- various woods, (39) 325.

bacteria—

- activity, relation to lime requirement, (39) 325.
- and fungi, ammonifying power, (32) 29.
- fungi, associative action, (36) 215.
- fungi, relative importance, (36) 434.
- protozoa, relation, (36) 322.
- soil productiveness, relation, (32) 124.

bacteria, as affected by—

- acids and alkalis, (37) 213.
- alkali salts, (26) 322; (27) 124; (28) 519, 719; (32) 320; (33) 323.
- antiseptics, (31) 516.
- arsenic, (38) 322.
- calcium, (32) 33.
- continuous croppings, (35) 813.

Soil—Continued.

bacteria, as affected by—continued.

- crops, (37) 421.
- cyanamid and dicyanodiamid, (40) 724.
- humus-forming materials, (37) 120.
- irrigation, (31) 24.
- lime, (27) 720; (30) 127.
- limestone, (26) 423.
- magnesium and calcium salts, (38) 818.
- manure, (26) 31; (27) 518; (32) 216; (35) 814; (37) 23.
- mineral fertilizers, (31) 821.
- phosphates and sulphates, (33) 515.
- protozoa, (28) 330; (30) 322; (32) 321; (33) 515; (34) 326; (36) 422, 518, 622.
- salts, (36) 515.
- seasons, (36) 21; (37) 421.
- seed bed preparation, (36) 215.
- sulphur, (30) 532.
- toluol and carbon bisulphid, (28) 824.
- volatile conifer products, (32) 618.
- water, (35) 814; (37) 421.

bacteria—

- at different depths, (36) 21.
- coli-like, studies, (38) 19.
- counting, culture media for, (32) 625.
- decomposition of silicates by, (31) 121.
- determination, (28) 727; (29) 824; (31) 731; (36) 31.
- distribution and activities, (27) 822.

bacteria, effect on—

- plant growth, (31) 827.
- rock phosphate, (35) 723.
- solubility of phosphoric acid, (36) 515.

bacteria—

- functions of, (31) 127.
- growth in muck, (36) 516.
- growth of, (31) 620.
- in acid soils, studies, (40) 620.
- migration of, (29) 21.
- nitrifying, effect on tricalcium phosphate, (39) 23.
- nitrogen-assimilating, (39) 722.
- nitrogen-cycle, as affected by auximones, (37) 517.
- nitrogen fixation by, (26) 123; (28) 628; (30) 217.
- nitrogen-fixing, in Iowa soils, (37) 517.
- nitrogen-fixing, studies, (38) 428.
- nonsymbiotic nitrogen-fixing, (34) 815.
- notes, (31) 818; (37) 298.
- nutrition of, (35) 814.
- of frozen soils in Quebec, (40) 513.
- oxygen requirements, (37) 221.
- potash-fixing power, (34) 815.

bacteria, relation to—

- angleworms, (29) 316.
- evaporation, (27) 516.
- fertilizers, (34) 326.
- humus, (32) 721.
- hydrogen-ion exponent, (39) 723.
- irrigation, (37) 86.
- soil fertility, (34) 619; (35) 215.

bacteria—

- respiratory intensity, (31) 313.
- role in relation to phosphates, (40) 620.
- spore-forming, (35) 523.
- studies, (29) 221; (31) 818; (35) 626; (37) 19, 516, 517; (40) 739.
- toxins, (40) 23.
- vanillin-destroying, (40) 24.
- variations in, (31) 26.

bacteriology, (32) 216.

bacteriology—

- course in, (28) 332.
- digest of data, (28) 826.
- discussion, (26) 718.
- laboratory manual, (27) 728; (33) 791; (36) 692.
- methods in, (30) 218; (31) 420.
- notes, (27) 516.
- review of investigations, (33) 513.
- studies, (27) 517, 720; (28) 120, 121; (29) 21, 422; (30) 624; (31) 121; (33) 120, 823; (39) 324; (40) 125.
- treatise, (28) 34.

biology—

- and physics, ancient ideas on, (30) 212.
- field and laboratory experiments, (36) 213.
- review of investigations, (30) 119.
- studies, nitrogen determination in, (40) 711.

Soil—Continued.

- botany, discussion, (26) 718.
- carbonates, decomposition, (31) 25; (32) 123.
- carbonates, determination, (30) 808; (35) 503; (40) 308.
- catalase, notes, (31) 313.
- colloids—
 - adsorptive power, (34) 18.
 - ammonia-soluble inorganic, (31) 801.
 - as affected by soluble salts, (35) 622.
 - behavior in presence of soluble salts, (33) 324.
 - determination, (33) 118.
 - importance, (29) 817; (34) 816.
 - notes, (30) 513, 718; (32) 318; (35) 512.
 - properties, (31) 514.
 - relation to plowsole, (40) 417.
 - role of, (33) 321, 513.
 - studies, (32) 813; (35) 16, 319, 813; (36) 21; (37) 520.
 - treatise, (34) 515.
- compactness, effect on root development, (26) 327.
- concretions due to manganese or lime, (32) 215.
- conditions—
 - and plant growth, treatise, (39) 512.
 - in Selby smoke zone, (35) 213.
 - in United States and western Canada, handbook, (29) 596.
 - relation to bacterial activity, (34) 813.
- constituents—
 - and ammonium salts, interaction, (32) 121.
 - as semipermeable membranes, (31) 720.
 - assimilation by oats, (31) 632.
 - beneficial, importance, (26) 419.
 - inhibition of plant toxins by, (37) 519.
 - organic, effect on nitrogen fixation by *Azotobacter*, (33) 620, 823.
 - organic, notes, (28) 29.
 - organic, studies, (27) 500.
 - solubility, (30) 221.
 - studies, (28) 324.
- containers, effect of paraffin lining, (37) 812.
- containers for plant culture work, (36) 524.
- crusts, relation to fertilizers, (31) 123.
- decoctions, effect on bacteria, (28) 329.
- depletion, relation to nitrate reduction in plants, (37) 549.
- erosion—
 - as affected by forests, (29) 842.
 - by wind, (29) 811; (31) 317.
 - cause and prevention, (30) 625.
 - coast, Spartina for, (40) 530.
 - control, (39) 813.
 - economic waste from, (31) 316.
 - effect of cattle on, (39) 512.
 - in forests, (30) 743.
 - Iowa, (40) 717.
 - Kansas, (38) 422.
 - ravines, prevention, (26) 643.
 - the South, (32) 811.
 - injurious effects, (32) 30.
 - measurement, (31) 24.
 - model for schools, (27) 797.
 - notes, (34) 818, 885.
 - of Sioux Point, S. Dak., (26) 27.
 - on western grazing lands, (39) 439.
 - prevention, (26) 323; (31) 317; (32) 514, 884; (34) 326, 819; (36) 320, 422, 723; (37) 87, 286, 520; (40) 188.
 - experiments, (27) 393, 394.
 - experiments at New York Cornell Station, (29) 820.
 - experiments, standardization, (39) 829.
 - extracts—
 - as affected by season and crop growth, (38) 813.
 - as criterion of productivity, (38) 812; (40) 120.
 - as indicating chemical needs of soil, (39) 331.
 - reaction of, (30) 121.
 - ultramicroscopy of, (30) 516.
 - factor in crop centers, (39) 734.
 - fatigue—
 - notes, (29) 243.
 - review of literature, (34) 326.
 - studies, (30) 426, 624; (33) 31.
 - treatment, (37) 421.
 - fauna, rhizopods and flagellates in, (35) 121.

Soil—Continued.

- fertility—
 - accumulation, (32) 121.
 - and agriculture, question summary, (28) 897.
 - and fertilizers, treatise, (28) 423.
 - and second-growth vegetation, correlation, (39) 115.
- fertility as affected by—
 - alfalfa, (29) 633.
 - crop rotation, (27) 821; (39) 424.
 - fertilizers, (34) 517.
 - glaciation, (32) 317.
 - inundation, (30) 213.
 - lime and chalk, (34) 221.
 - manure, (29) 317.
 - organic matter, (39) 725.
 - sulphur, (35) 728.
- fertility—
 - bacterial theory, (28) 718.
 - conservation and improvement, (27) 818; (29) 125.
 - correlation with seasonal rainfall, (39) 511.
 - determination, (26) 21, 123; (27) 417; (31) 226; (33) 97; (34) 218; (36) 622.
 - dynamic theory, (34) 812.
 - effect on root development, (26) 328.
 - experiments, standardization, (40) 823.
 - factors in, (32) 30.
 - improvement, (28) 533; (34) 528; (38) 219.
 - in China, Korea, and Japan, (27) 518.
 - in India, (27) 319.
 - loss by leaching, (36) 725.
 - loss from cropping, (39) 327.
 - maintenance, (26) 423; (27) 124; (28) 533; (29) 213, 623; (30) 23, 320, 426; (31) 217, 318, 819; (32) 31, 725; (34) 516, 520, 621, 722; (35) 325; (36) 120, 618; (37) 514, 720, 813; (38) 119; (39) 125, 815.
 - maintenance with nature's fertilizers, (39) 816.
 - manual, (30) 517.
 - measurement, (36) 510.
 - misconceptions concerning, (33) 721.
 - new views on, (31) 516.
 - notes, (27) 216, 219; (28) 29; (31) 122, 127, 221; (33) 695; (34) 22, 722; (37) 211, 214.
 - principles, (26) 519; (33) 721.
 - problems, (27) 819.
 - problems in Great Britain, (39) 616.
- fertility, relation to—
 - bacteria, (34) 619.
 - chemical composition, (33) 421.
 - crystalloids and colloids, (28) 814.
 - dairy farming, (27) 280.
 - earthworms, (27) 518.
 - fertilizers, (29) 213; (30) 821.
 - fungi, (29) 824.
 - humus, (37) 718.
 - lime, (28) 223.
 - plant food, (26) 621; (28) 220.
 - plant transpiration, (26) 36.
 - sulphur, (34) 27.
 - weeds, (34) 39.
- fertility—
 - review of investigations, (26) 123.
 - role of nitrification in, (37) 519.
 - studies, (26) 816; (27) 500; (28) 324; (29) 416, 728; (31) 620; (36) 814; (37) 214, 625; (39) 422, 737; (40) 419, 624, 719.
 - testing, (28) 537.
 - treatise, (26) 521.
 - under trees, (38) 816.
 - variation in, (28) 123.
 - work in India, (40) 825.
 - work in Kansas, (40) 319.
 - work in Rhode Island, (38) 325.
- flora—
 - as affected by arsenic compounds, (32) 720.
 - as affected by leaching, (35) 514.
 - nitrogen-fixing powers of, (35) 320.
 - of India, (36) 449.
 - studies, (37) 516, 517; (38) 514.
- flows in polar and subpolar regions, (31) 23.
- formation, relation to animal organisms, (26) 223.
- formation, relation to forest cover, (29) 643.
- forming minerals, microscopic determination, (28) 812.
- Fumigant and Insecticide, tests, (30) 156.

Soil—Continued.
fungi—

- activity, (40) 122, 318, 721.
- ammonifying efficiency, (32) 817.
- and their activities, (36) 214, 215.
- in a forest nursery, (40) 852.
- incubation studies, (35) 513; (36) 221.
- notes, (27) 223.
- of Norway, (34) 226.
- pathogenic, control, (40) 747.
- proteolytic activities, (40) 721.
- relation to potato diseases, (39) 249.
- studies, (28) 442; (31) 127.
- gas, radioactivity, (33) 211.
- gases, studies, (34) 514; (35) 120, 212.
- grains, properties, (32) 617.
- granulation, causes, (26) 420.
- granulation products, classification, (31) 418.
- homogeneity, correlation coefficient for, (33) 727.
- humidity, effect on development of cotton, (34) 337.
- hygiene, notes, (30) 125.
- leachings, equipment for investigation, (32) 719.
- microflora and microfauna, device for obtaining, (30) 28.
- microorganisms—
 - activities, (35) 25.
 - ammonia accumulation by, (37) 812.
 - ammonia consumption by, (35) 729.
 - longevity on drying, (34) 732.
 - nitrate transformation by, (38) 723.
 - nitrogen requirements, (31) 313.
 - notes, (28) 323; (29) 122, 123, 515.
- milling machines, tests, (33) 891.
- moisture and plant succession, (37) 418.
- moisture as affected by—
 - alfalfa, (29) 634.
 - cropping, (29) 425.
 - crops, (33) 225; (34) 17.
 - density of stand of trees, (33) 816.
 - desert rainfall, (30) 619.
 - fallowing, (26) 421, 533.
 - fertilizers, (28) 124; (33) 217.
 - organic matter, (40) 811.
 - tillage methods, (40) 719.
- moisture—
 - classification and measurement, (39) 18.
 - coefficient, (29) 626.
 - conservation, (29) 85, 211, 725; (31) 419, 494; (32) 30, 525; (33) 217; (36) 723; (37) 212, 437.
 - content during drought, (39) 617.
 - content, effect on growth of barley, (40) 219.
 - content of surface foot, (39) 813.
 - determination, (28) 204; (32) 216, 719; (39) 714.
 - determination, interpreting, (26) 421.
 - determination, reporting results, (39) 504.
- moisture, effect on—
 - acidity, (40) 316.
 - availability of fertilizers, (28) 420.
 - availability of plant nutrients, (28) 537.
 - composition of grain, (27) 334.
 - fertilizers, (32) 813, 814.
 - growth and maturity in maize, (39) 20.
 - growth of cucumbers, (30) 142.
 - nitrification, (28) 720.
 - plant associations, (38) 425.
 - potato tubers, (36) 336.
 - protein content of wheat, (30) 662, 836.
 - rate of increase of sugar beet root louse, (33) 357.
 - ratio of tops to roots in plants, (31) 628.
 - root development, (26) 327.
 - salts and nitrates, (36) 816.
 - wheat, (32) 814; (37) 340.
 - winterkilling of cereals, (38) 415.
- moisture—
 - equivalents, (26) 421; (39) 214, 215.
 - evaporation index, (30) 223.
 - factors affecting, (26) 421; (27) 320; (28) 218.
 - field study of, (28) 537.
 - in forests and cultivated fields, (37) 418.
 - inactive, measurement, (36) 719.
 - loss by evaporation, and transpiration, (38) 418.
 - loss by percolation, (33) 619; (38) 418.
 - minimum, dynamic, determination, (38) 719.
 - movement, (27) 500.
 - movement and distribution, (37) 623, 808.

Soil—Continued.

- moisture—continued.
 - movement in an Egyptian cotton field, (30) 21.
 - movement in relation to temperature, (34) 215.
 - notes, (30) 814.
 - of surface foot, effect on nitrification, (40) 719.
- moisture, relation to—
 - apple spot diseases, (38) 753.
 - dry farming, (28) 321.
 - forests, (36) 843.
 - orange growth, (38) 541.
 - plant activities, (27) 214.
 - plant growth, (26) 420; (32) 813.
 - plant succession, (32) 128.
 - root systems of plants, (31) 514.
 - temperature, (34) 127.
 - transpiration and photosynthesis in corn, (36) 525.
 - wilting of plants, (27) 515.
- moisture—
 - retaining, (27) 619.
 - review of investigations, (31) 522.
 - studies, (28) 419; (29) 620, 724; (34) 816; (35) 212; (38) 620.
 - under different cropping systems, (40) 429.
 - under dry farming, (38) 319.
 - under irrigation, (38) 320.
 - unfree, and heat of wetting, relation, (40) 20.
- mulch, effect on evaporation, (28) 218.
- mulch, paper on, (36) 197.
- nitrates as affected by—
 - green manuring, (33) 721.
 - resin and tannin, (36) 513.
 - weeds, (38) 814.
- nitrates, effect on wheat yield, (33) 217.
- nitrogen as affected by—
 - crops and fertilizers, (35) 321.
 - heat, (39) 617.
 - legumes, (26) 196.
 - organic materials, (35) 218.
- nitrogen—
 - availability, (26) 434.
 - forms of, (33) 513.
 - meteorological and biological factors affecting, (32) 718.
 - studies, (28) 814.
- organisms, ammonia accumulation, relation to carbon dioxide production, (39) 516.
- organisms as affected by—
 - bacteriotoxins, (28) 628.
 - carbon bisulphid, (33) 323; (35) 20.
 - carbon disulphid and toluol, (40) 513.
- organisms—
 - culture media for, (40) 739.
 - destruction of cellulose by, (26) 825.
 - destruction of paraffin by, (32) 523.
 - effect of toxic substances on, (31) 342.
 - factors affecting growth, (32) 222.
 - microscopic study, (39) 324.
 - monograph, (30) 323.
 - nitrifying, (39) 619.
 - nitrogen-fixing power, (32) 29.
 - proteolytic activities, (40) 721.
 - rapid study of, (35) 226.
 - spore-forming, (39) 325.
 - steam-formalin treatment for, (29) 645.
- particles, distribution, (32) 511.
- particles, separation according to specific weight, (31) 616.
- phosphates—
 - as affected by ignition, (26) 803.
 - solubility, (26) 723.
 - solubility as affected by ignition, (28) 312.
- physics—
 - and management, textbook, (38) 598.
 - discussion, (26) 717.
 - instruction in, (26) 434.
 - laboratory manual, (28) 493.
 - manual, (34) 293.
 - review of investigations, (30) 119.
 - studies, (26) 28; (27) 214, 819.
- plats, biological variations in, (37) 719.
- potash as affected by lime or gypsum, (36) 519.
- potash, availability as affected by various substances, (36) 625.

Soil—Continued.

- pressures, determining, (36) 684.
- problems in Oklahoma, (26) 434.
- productivity—
 - as affected by sugar, (28) 623.
 - as affected by sugar beets, (28) 336.
 - factors in, (35) 513.
 - increasing, (29) 329.
 - judging, (29) 820; (36) 117, 511.
 - notes, (28) 292.
- profile survey of—
 - Henrys Fork, Idaho, (36) 583.
 - Rio Grande, (36) 583.
- reaction—
 - as affected by lime, (40) 124.
 - as affecting nitrogen-assimilating bacteria, (39) 619, 722, 723.
 - importance, (26) 422.
 - relation to weed growth, (40) 832.
 - sanitation, notes, (34) 744.
- sanitation, relation to cereal cropping, (29) 516, 820.
- scarifier, description and tests, (28) 486.
- science, new, and plant ecology, (36) 523.
- sickness—
 - in wheat lands, (31) 148.
 - investigations, (28) 520.
 - notes, (28) 321.
 - review of investigations, (28) 815.
 - studies, (36) 514.
 - treatment, (26) 322; (31) 146.
- "sicknesses" in Netherlands, (40) 319.
- solution—
 - as affected by boiling, (30) 124.
 - index of biological changes, (39) 813.
 - index of soil fertility, (30) 124; (31) 620.
 - related to growth of barley, (40) 218.
 - colloidal substances in, (28) 516.
 - composition, (27) 500; (37) 116.
 - composition and use, (36) 720.
 - concentration, (28) 28; (34) 323, 419, 721; (37) 116; (38) 16.
- solution, concentration—
 - as affected by sterilization, (37) 719.
 - relation to biological activities, (39) 323.
 - relation to plant growth, (33) 223.
- solution—
 - effect on plant diseases, (26) 826.
 - extraction, (38) 803.
 - floculation studies, (30) 623.
 - freezing-point, (38) 16, 813.
 - intake by plants, (35) 825.
 - membrane for studying, (40) 718.
 - method of obtaining, (30) 624; (31) 317; (32) 29; (33) 322; (36) 720.
 - monograph, (28) 320.
 - movement of salts in, (39) 323.
 - nature, (33) 322.
 - notes, (27) 819.
 - obtained by hydraulic action, (38) 512.
 - obtained by oil pressure method, (37) 717; (39) 20.
 - physiological balance, (39) 419.
 - plants as indicators of relative density, (29) 212.
 - preparation, (29) 203.
 - protective effect on soil organisms, (34) 732.
 - relation to plant physiology and distribution, (26) 422.
 - rôle in plant nutrition, (28) 321.
 - studies, (30) 516; (40) 512, 718.
 - studies, lysimeter in, (28) 28.
 - treatise, (26) 122.
- specialists, training, (40) 300.
- studies, (27) 118; (36) 618.
- studies—
 - and teaching, methods and aims, (30) 512.
 - botanical method, (37) 515.
 - drainage tanks for, (37) 799.
 - factors in, (37) 18.
 - in United States, (27) 117.
 - in various countries, (27) 320.
 - methods, (31) 514.
 - outline, (32) 494.
 - theory of antagonism of salts in, (30) 98.
- surfaces, penetration by rain, (29) 426.
- survey in Alabama—
 - Barbour Co., (37) 621.
 - Bullock Co., (34) 210.
 - Clay Co., (36) 511.

Soil—Continued.

- survey in Alabama—continued.
 - Cleburne Co., (34) 119.
 - Dale Co., (29) 16.
 - Escambia Co., (34) 210.
 - Lawrence Co., (34) 615.
 - Limestone Co., (34) 717.
 - Lowndes Co., (40) 216.
 - Monroe Co., (40) 419.
 - Pickens Co., (38) 512.
 - Pike Co., (29) 16.
 - Russell Co., (34) 119.
 - Walker Co., (35) 624.
 - Washington Co., (38) 214.
 - Wilcox Co., (39) 20.
- survey in Alaska, (34) 209.
- survey in Alaska, Kenai Peninsula region, (40) 813.
- survey in Arkansas—
 - Ashley Co., (31) 813.
 - Columbia Co., (34) 717.
 - Craighead Co., (38) 513.
 - Hempstead Co., (38) 812.
 - Jefferson Co., (36) 20.
 - Mississippi Co., (35) 17.
 - Pope Co., (34) 119.
 - Yell Co., (36) 618.
- survey in California—
 - Healdsburg area, (37) 810.
 - Honey Lake area, (38) 214.
 - Livermore area, (29) 17.
 - Lower San Joaquin Valley, (40) 118.
 - Madera area, (29) 17.
 - Merced area, (35) 117.
 - Pasadena area, (38) 215.
 - Red Bluff area, (29) 17.
 - Riverside area, (38) 421.
 - Sacramento Valley, (34) 120.
 - San Diego region, (39) 210.
 - San Fernando Valley area, (38) 621.
 - San Francisco Bay region, (36) 721.
 - Ukiah area, (36) 420.
- survey in Colorado, Uncompahgre Valley area, (29) 17.
- survey in Delaware, New Castle Co., (37) 211.
- survey in Florida, (28) 31.
- survey in Florida—
 - Bradford Co., (31) 813.
 - Fort Lauderdale area, (34) 210.
 - Franklin Co., (36) 114.
 - Hernando Co., (34) 211.
 - Hillsborough Co., (39) 211.
 - Indian River area, (34) 211.
 - Pinellas Co., (32) 26.
 - Putnam Co., (34) 717.
- survey in Georgia—
 - Brooks Co., (39) 211.
 - Bulloch Co., (29) 16.
 - Clay Co., (35) 421.
 - Colquitt Co., (34) 417.
 - Crisp Co., (38) 215.
 - Dekalb Co., (34) 417.
 - Gordon Co., (31) 814.
 - Habersham Co., (32) 513; (37) 211.
 - Jackson Co., (34) 417.
 - Jasper Co., (39) 512.
 - Jeff Davis Co., (32) 317.
 - Jones Co., (32) 513.
 - Laurens Co., (35) 811.
 - Meriwether Co., (38) 718.
 - Miller Co., (31) 814.
 - Polk Co., (35) 508.
 - Richmond Co., (38) 718.
 - Stewart Co., (34) 120; (35) 721.
 - Sumter Co., (29) 16.
 - Talbot Co., (32) 513.
 - Tatnall Co., (34) 510.
 - Terrell Co., (34) 211.
 - Troup Co., (35) 811.
 - Turner Co., (35) 421.
 - Walker Co., (29) 16.
 - Washington Co., (36) 420.
 - Wilkes Co., (36) 420.
- survey in Idaho, Latah Co., (37) 21.
- survey in Illinois—
 - Bond Co., (33) 21.
 - Du Page Co., (37) 720.
 - Edgar Co., (37) 514.
 - Kane Co., (38) 718.
 - Kankakee Co., (36) 20.

Soil—Continued.

survey in Illinois—continued.

Lake Co., (33) 415.
McDonough Co., (32) 26.
McLean Co., (33) 717.
Pike Co., (34) 15.
Tazewell Co., (36) 619.
Winnebago Co., (35) 421.

survey in Indiana, (29) 815.

survey in Indiana—

Benton Co., (38) 215.
Clinton Co., (34) 510.
Delaware Co., (34) 120.
Elkhart Co., (35) 319.
Grant Co., (36) 721.
Hendricks Co., (34) 120.
Porter Co., (40) 420.
Starke Co., (36) 721.
Warren Co., (35) 117.
Wells Co., (37) 21.
White Co., (36) 812; (37) 21.

survey in Iowa, (39) 812.

survey in Iowa—

Bremer Co., (32) 317; (37) 211; (38) 18.
Clay Co., (40) 216.
Clinton Co., (37) 514.
Lee Co., (34) 809.
Mitchell Co., (39) 422.
Muscatine Co., (35) 117; (40) 216.
Pottawattamie Co., (34) 616; (40) 216.
Ringgold Co., (39) 422.
Scott Co., (38) 215.
Sioux Co., (36) 721.
Van Buren Co., (37) 21.
Webster Co., (35) 422.

survey in Kansas—

Cherokee Co., (34) 809.
Cowley Co., (37) 419.
Jewell Co., (36) 115.
Montgomery Co., (34) 121.
Reno Co., (34) 809.
Shawnee Co., (32) 121.
western, (29) 17.

survey in Kentucky, (33) 510, 511.

survey in Kentucky—

Franklin Co., (34) 322.
Graves Co., (34) 122.
Jessamine Co., (35) 508.
Rockcastle Co., (29) 16.

survey in Louisiana—

Concordia Parish, (29) 16.
Lafayette Parish, (35) 319.
Rapides Parish, (39) 321.
Webster Parish, (35) 17.

survey in Maine, Cumberland Co., (37) 810.

survey in Maryland—

Howard Co., (38) 621.
Montgomery Co., (35) 18.

survey in Minnesota—

Anoka Co., (40) 217.
Goodhue Co., (32) 616.
Pennington Co., (35) 625.
Ramsey Co., (35) 320.

survey in Mississippi—

Adams Co., (29) 16.
Chickasaw Co., (37) 621.
Clarke Co., (34) 511.
Coahoma Co., (36) 420.
Covington Co., (40) 813.
Grenada Co., (36) 619.
Hinds Co., (39) 21.
Jefferson Davis Co., (35) 422.
Jones Co., (34) 122.
Lauderdale Co., (29) 16.
Lee Co., (39) 21.
Newton Co., (39) 422.
Noxubee Co., (29) 16.
Wilkinson Co., (34) 211.

survey in Missouri, (26) 222; (39) 813.

survey in Missouri—

Barry Co., (40) 119.
Buchanan Co., (37) 122.
Cape Girardeau Co., (29) 17.
Dekalb Co., (35) 811.
Dunklin Co., (35) 625.
Greene Co., (34) 122.
Grundy Co., (34) 511.
Harrison Co., (34) 616.
Jackson Co., (29) 17.
Johnson Co., (35) 213.

Soil—Continued.

survey in Missouri—continued.

Marion Co., (29) 17.
Newton Co., (36) 812.
Nodaway Co., (34) 123.
Pemiscot Co., (29) 17.
Perry Co., (34) 123.
Pettis Co., (35) 422.
Ralls Co., (32) 213.
Ripley Co., (36) 721.

survey in Montana, Bitterroot Valley area, (36) 620.

survey in Nebraska—

Box Butte Co., (39) 513.
Cass Co., (32) 214.
Dawes Co., (38) 216.
Dodge Co., (39) 321.
Douglas Co., (34) 211.
Fillmore Co., (38) 812.
Gage Co., (35) 509.
Hall Co., (39) 321.
Kimball Co., (38) 719.
Nemaha Co., (34) 717.
Phelps Co., (40) 813.
Polk Co., (37) 122.
Richardson Co., (37) 211.
Saunders Co., (34) 212.
Scotts Bluff Co., (34) 511.
Seward Co., (35) 117.
Thurston Co., (35) 118.
Washington Co., (37) 22.
Wayne Co., (40) 814.

survey in New Jersey—

Camden area, (37) 123.
Freehold area, (34) 616.

survey in New York—

Chautauqua Co., (35) 423.
Clinton Co., (35) 18; (36) 511.
Cortland Co., (38) 216.
Monroe Co., (29) 16.
Oneida Co., (34) 123, 718.
Ontario Co., (29) 16.
Orange Co., (32) 812.
Schoharie Co., (37) 514.
Yates Co., (39) 513.

survey in North Carolina—

Alleghany Co., (36) 813.
Anson Co., (37) 621.
Bladen Co., (34) 418.
Cabarrus Co., (29) 16.
Cleveland Co., (40) 420.
Columbus Co., (38) 216.
Davidson Co., (37) 22.
Forsyth Co., (32) 214.
Granville Co., (29) 16.
Halifax Co., (40) 217.
Harnett Co., (38) 323.
Hertford Co., (38) 216.
Lincoln Co., (35) 423.
Mecklenburg Co., (29) 16; (37) 419.
Randolph Co., (34) 124.
Rowan Co., (34) 212.
Stanley Co., (40) 217.
Union Co., (34) 810.
Wake Co., (35) 509.
Wayne Co., (35) 811.

survey in North Dakota—

Bottineau Co., (38) 422, 621.
Dickey Co., (36) 421; (37) 720.
Lamoure Co., (36) 722.

survey in Ohio, (36) 396.

survey in Ohio—

Geauga Co., (35) 509.
Hamilton Co., (37) 212.
Marion Co., (40) 217.
Miami Co., (40) 119.
Paulding Co., (34) 212.
Portage Co., (34) 810.
Stark Co., (34) 124.
Trumbull Co., (35) 18.

survey in Oklahoma—

Bryan Co., (34) 617.
Kay Co., (38) 621.
Muskogee Co., (34) 213.
Payne Co., (40) 420.
Roger Mills Co., (35) 625.

survey in Pennsylvania—

Blair Co., (37) 123.
Cambria Co., (36) 722.
Clearfield Co., (40) 814.

Soil—Continued.

- survey in Pennsylvania—continued.
 - Erie Co., (29) 16.
 - Lancaster Co., (35) 626.
 - south-central area, (29) 16.
 - Washington Co., (29) 16.
- survey in Puget Sound Basin, (29) 17.
- survey in South Africa, need of, (28) 423.
- survey in South Carolina—
 - Bamberg Co., (32) 28.
 - Berkeley Co., (40) 119.
 - Chesterfield Co., (34) 418.
 - Clarendon Co., (29) 16.
 - Dorchester Co., (36) 620.
 - Florence Co., (35) 118.
 - Hampton Co., (36) 813.
 - Orangeburg Co., (32) 616.
 - Richland Co., (39) 422.
 - Union Co., (32) 214.
- survey in southeast England, (26) 119.
- survey in Tennessee—
 - Jackson Co., (34) 213.
 - Shelby Co., (40) 814.
- survey in Texas—
 - Bell Co., (40) 120.
 - Brazos Co., (35) 626.
 - Eastland Co., (39) 212.
 - Ellis Co., (29) 16.
 - Grayson Co., (36) 620.
 - Gulf Coast area, (29) 16.
 - Jefferson Co., (34) 213.
 - Lee Co., (36) 620.
 - McLennan Co., (36) 620.
 - Panhandle region, (29) 16.
 - San Saba Co., (38) 422.
 - Smith Co., (36) 621.
 - south-central area, (34) 213.
 - Taylor Co., (39) 212.
 - Tyler Co., (36) 620.
 - Washington Co., (32) 617.
- survey in—
 - United States, (26) 718; (28) 421, 537; (29) 16; (31) 512; (34) 321; (36) 210.
 - Utah, Cache Valley area, (34) 214.
 - Vermont, Windsor Co., (40) 814.
- survey in Virginia—
 - Fairfax and Alexandria Counties, (37) 514.
 - Frederick Co., (35) 510.
 - Henrico Co., (32) 214.
- survey in Washington—
 - Franklin Co., (36) 621.
 - Palouse Irrigation Project, (36) 722.
 - Stevens Co., (34) 214.
- survey in West Virginia—
 - Boone Co., (32) 617.
 - Clarksburg area, (28) 216; (29) 17.
 - Jefferson, Berkeley, and Morgan Counties, (39) 212.
 - Lewis and Gilmer Counties, (37) 22.
 - Logan and Mingo Counties, (34) 124.
 - McDowell Co., (35) 118.
 - Point Pleasant area, (29) 17.
 - Raleigh Co., (35) 18.
 - Wyoming Co., (35) 118.
- survey in Wisconsin, (26) 221, 812; (28) 815.
- survey in Wisconsin—
 - Bayfield area, (29) 17; (34) 617.
 - Buffalo Co., (34) 215.
 - Columbia Co., (36) 723.
 - Dane Co., (34) 418.
 - Door Co., (40) 120.
 - Fond du Lac Co., (35) 19.
 - Iowa Co., (29) 17; (34) 617.
 - Jefferson Co., (36) 723.
 - Juneau Co., (35) 19.
 - Kewaunee Co., (35) 19.
 - La Crosse Co., (35) 19.
 - Marquette Co., (28) 620.
 - Milwaukee Co., (40) 120.
 - north-central area, (36) 20, 723; (38) 324.
 - northeastern area, (34) 617; (36) 723.
 - Portage Co., (38) 216.
 - Waukesha Co., (29) 17; (34) 617.
 - Waushara Co., (34) 617.
 - Wood Co., (38) 217.
- surveys—
 - development and economic value, (34) 513.
 - discussion, (26) 118, 519.
 - papers on, (26) 434; (32) 121.
 - probable error of sampling in, (34) 513.

Soil—Continued.

- suspensions, layer formation in, (39) 420; (40) 620.
- tank experiments, (31) 723; (33) 24; (35) 812.
- temperature, (27) 214; (36) 617.
- temperature as affected by—
 - cultivation, (33) 510.
 - cultural methods, (34) 217.
 - forest cover, (31) 415.
 - plant covering, (30) 122.
 - sand, (27) 516.
- temperature as factor in agriculture, (34) 419.
- temperature, effect on—
 - availability of fertilizers, (28) 420.
 - availability of plant nutrients, (28) 537.
 - crop yields, (30) 135.
 - seedling corn, (38) 530.
- temperature—
 - factor, evaluation, (40) 130, 426.
 - factors affecting, (26) 29; (34) 514.
 - notes, (28) 516.
 - relation to air temperature, (34) 15; (36) 208.
 - relation to climate, (34) 319.
 - relation to plant growth, (29) 19.
 - rise on moistening, (39) 617.
 - studies, (28) 116, 118; (29) 618; (34) 818; (35) 620.
 - surface, (28) 622.
 - surface, measurement, (37) 520.
- texture, relation to water level, (33) 806.
- toxins and nitrification, studies, (38) 322.
- toxins, formation, (31) 620; (34) 218.
- types, descriptions, (26) 221.
- variation, relation to crop production, (29) 416.
- water—*see also* Soil moisture.
 - changes in level of, (35) 813.
 - composition as affected by cultivation and manures, (29) 416.
 - movements of, (26) 28.
 - zeolites, properties of, (30) 23.
- zones, vertical, in mountainous Russia, (33) 418
- Soiling crops—
 - culture on moorland, (38) 132.
 - for Iowa, (31) 265.
 - for summer feeding, (29) 473.
 - in Nebraska, (40) 521.
 - notes, (37) 96, 895.
 - tests, (37) 733.
 - v. silage for dairy cows, (30) 874.
 - v. summer silage, (26) 574.
- Soiling, summer, suggestions for, (26) 72.
- Soils—
 - absorbent power, cause, (27) 619.
 - absorption—
 - and coagulation in, (35) 813; (40) 212.
 - and solution phenomena in, (32) 421.
 - in, (36) 622.
 - of ammonia by, (36) 425, 816.
 - phosphates by, (26) 122.
 - phosphoric acid in, (27) 216; (33) 515.
 - ultraviolet and infra-red rays by, (34) 817.
 - absorptive—
 - power, (31) 514.
 - power for ammonia, (36) 219.
 - power for fertilizers, (33) 122.
 - power for water, (37) 18.
 - properties, (27) 515.
 - acid—*see also* Soil acidity.
 - aluminum in, (39) 114.
 - and steam digestion, (28) 121.
 - as affected by fertilizers, (35) 22.
 - bacterial activity, (39) 325.
 - bacterial content, (40) 620.
 - growth of legumes on, (36) 514.
 - humus, nitrification in, (30) 424.
 - in Assam, (32) 812.
 - liming, (36) 514.
 - manganese in, (39) 627; (40) 728.
 - manganese in, action, (30) 823.
 - nitrate formation in, (36) 22.
 - nitrification in, (32) 121; (35) 514; (40) 620.
 - of Hawaii, (36) 813.
 - Japan, colloidal properties, (32) 318; (33) 215.
 - tropical countries, (31) 419.
 - or nonbasic, nitrification in, (30) 517.
 - studies, (36) 21.
 - utilization, (30) 23.
 - Actinomycetes in, (29) 222; (37) 517.
 - adaptation to wheat or rye, (34) 813.
 - added boron in, (39) 429.

Soils—Continued.

- adobe, salts in, (30) 517.
- adsorption—
 - and acidity in, (36) 117.
 - in, (30) 321; (31) 814; (33) 22, 411, 420; (37) 624.
 - of potassium and phosphate ions by, (35) 17.
- adsorptive power, (34) 18, 515.
- adsorptive power, determination, (31) 119.
- aeration—
 - and drainage, (33) 97.
 - by earthworms, (26) 619.
 - ecological significance, (37) 213.
 - effect on plant growth, (27) 821.
 - experiments, use of pits in, (40) 629.
 - importance, (36) 724, 733.
 - notes, (27) 419; (28) 684; (34) 334, 514; (36) 320.
 - relation to forestry, (39) 648.
 - relation to root growth, (40) 30, 820.
 - relation to temperature, (34) 216.
 - studies, (40) 718, 739.
- agricultural adaptations of, (26) 718; (31) 35, 418.
- air-dried, changes in, (30) 123.
- algae in, (28) 31.
- alkali, *see* Alkali.
- alluvial, of Falcat basin, Eritrea, (33) 418.
- American, composition, (28) 28.
- amino acids in, (34) 515.
- amino acids in, behavior, (27) 500; (28) 813; (29) 124.
- ammonia—
 - absorption and nitrification in presence of zeolites, (39) 520.
 - absorption by, (34) 719.
 - evaporation and transformation in, (26) 525.
 - extraction from, (40) 203.
 - fixation in, (37) 318.
 - fixing power, (27) 322.
 - formation in, (27) 721.
 - formation in, as affected by salts, (39) 218.
- ammonification, *see* Ammonification.
- ammonifying efficiency, (27) 517; (28) 31.
- analyses, (26) 26, 127; (27) 216, 320, 321, 416; (28) 217, 493, 736; (29) 119; (30) 618, 622, 818; (31) 24; (32) 122; (33) 204, 205, 212, 213, 214, 321; (34) 810; (37) 114; (39) 423.
- analyses—
 - insufficiency, (28) 30.
 - paper on, (32) 121.
 - relation to plant yield, (26) 519.
 - value, (29) 512; (30) 119, 513; (32) 321; (33) 421, 811; (36) 617.
- and crops, textbook, (30) 695.
- plants, relationship, (28) 37, 718.
- plants, water relation between, (34) 521.
- soil fertility, textbook, (28) 794.
- soil management, course in, (39) 897.
- animal organisms of, (34) 306.
- antagonism of salts in, (31) 721.
- arable, formation, (36) 114.
- arable, nitrogen content, (30) 716.
- arid—
 - brown niter spots in, (35) 724.
 - fertilizers for, (36) 726.
 - humus nitrogen problem in, (35) 513.
 - humus of, (34) 719.
 - mechanical analyses, (26) 719.
 - nitrification in, (29) 21, 211.
 - nitrogenous fertilizers for, (34) 219, 621.
- arsenic content, (30) 321, 423.
- as affected by—
 - absorbents, (36) 214.
 - aldehydes, (31) 620.
 - alfalfa, (40) 319, 719, 722.
 - ammonium sulphate, (34) 622.
 - arsenic, (32) 730; (34) 421.
 - bastard trenching, (30) 236.
 - beech leaves and litter, (35) 119.
 - calcium, (32) 33.
 - calcium carbonate and sulphate, (39) 821.
 - caustic lime and chalk, (32) 399.
 - chlorids, (35) 423.
 - climate, (30) 514; (31) 214; (33) 210.
 - continuous cropping, (35) 813.
 - cowpeas, (34) 420.
 - disinfectants, (31) 620.
 - dynamite, (34) 125, 819.

Soils—Continued.

- as affected by—continued.
 - earthworms, (30) 425.
 - fairy-ring fungi, (38) 222.
 - fertilizers, (27) 622; (30) 219; (32) 31, 721; (33) 122; (35) 216, 516.
 - freezing, (26) 618.
 - frost, (29) 212.
 - fungus parasites of plants, (29) 150.
 - green manuring, (39) 326.
 - heating, (26) 618, 722; (30) 419; (31) 25, 216, 620; (32) 721; (35) 138, 722.
 - humus, (30) 122.
 - irrigation and manure, (36) 816.
 - lime, (27) 218; (29) 210; (31) 220.
 - long-continued one-sided fertilizing, (28) 624.
 - manganese, (40) 820.
 - molasses, (27) 419.
 - nucleic acid, (26) 814.
 - organic solvents, (37) 422.
 - partial sterilization, (28) 121.
 - plant growth and fertilizers, (27) 124; (28) 520.
 - plant residues and sugars, (40) 121.
 - plant roots, (30) 120; (33) 216.
 - radioactivity, (33) 23.
 - salts, (26) 618.
 - sawdust from various woods, (39) 325.
 - silicic acid in lime, (26) 34.
 - smoke, (27) 229; (32) 422.
 - sodium arsenite, (33) 623.
 - soluble salts, (26) 216.
 - sterilization, (29) 22; (35) 515.
 - storage, (38) 619.
 - sugar, (27) 722.
 - volcanic ash, (29) 726.
 - weather, (31) 214.
 - wet cultivation for rice, (38) 117.
- atmospheric pressure in, (26) 323.
- auto-irrigators for, (38) 719.
- Bacillus radiclecola* in, (29) 423; (33) 121.
- bacterial—
 - content as affected by carbon dioxide gas, (39) 618.
 - flora of, (30) 819.
 - slime in, (27) 620.
 - toxins in, (32) 399.
- bacteriological—
 - analysis, (28) 425; (29) 824; (39) 312.
 - analysis, error in, (36) 214.
 - analysis, sampling for, (39) 618.
 - studies, (28) 416.
 - tests, (26) 322; (40) 317.
- bacterio-toxins in, (27) 621.
- bacterio-toxins, nonpersistence, (40) 23.
- Bacterium lactis viscosum* in, (40) 214.
- barren, studies, (31) 819.
- benzene derivatives in, (30) 610.
- biochemical factors in, (27) 500; (28) 29.
- biochemical processes in, (34) 217; (40) 515.
- biological—
 - absorption, (27) 20; (31) 313.
 - actions, measuring, (36) 116.
 - activity, relation to concentration of solution, (39) 323.
 - analysis of, (31) 216.
 - changes in, during storage, (37) 17.
 - changes, solution as index, (39) 813.
- biology of, (28) 416.
- black, improvement, (27) 416.
- black, of Oued R'Dom Valley, Morocco, (28) 717.
- black pigment of, (36) 815.
- bleaching, (32) 85.
- bleached, in North Sea marshes, (30) 514.
- blow, control, (32) 793.
- blowing, management, (31) 25.
- bog, *see* Bog.
- brown, of Europe and Asia, (27) 416.
- brown, of Java and Malay Peninsula, (34) 811.
- "brown spots" in, (39) 323.
- calcareous—
 - black alkali in, (38) 18.
 - effect on plants, (27) 824; (31) 627, 816; (35) 726.
 - relation to pineapple chlorosis, (26) 121; (29) 623.
 - utilization, (29) 632.
- calcium compounds in, (36) 621.

Soils—Continued.

- caliche, composition, (35) 511.
- capacities for irrigation water, (39) 213.
- capillarity, (28) 622.
- capillary lift of, measurement, (30) 22; (31) 720.
- carbon determination in, (40) 308.
- carbon dioxide production in, (31) 127; (38) 118.
- carbon dioxide treatment, (39) 618, 620; (40) 739, 820.
- carbon-nitrogen relations, (38) 421.
- carbonized material in, (28) 418.
- Caribou loam, fertilizer requirements, (39) 327.
- Carrington loam, (27) 18, 512.
- catalysis, studies, (28) 118.
- catalytic power, (30) 425.
- Catlin's River, analyses, (26) 719.
- cellulose-destroying power of, (31) 313.
- cementing material, plant food value, (27) 513.
- characterizing according to molecular composition of silicates, (31) 22.
- chemical—
 - changes, microbial agency in, (38) 322.
 - characterization, (27) 417.
 - criteria of productivity, (40) 120.
- chemistry of, (28) 416; (31) 515; (32) 618.
- chemistry of—
 - discussion, (26) 717.
 - progress in, (30) 212.
 - review of investigations, (30) 119.
 - status, (32) 718.
 - studies, (40) 125.
 - treatise, (30) 512.
- cherozem—
 - classification, (28) 515.
 - nitrate content, (34) 618.
 - notes, (28) 319.
 - of Northern Caucasus, (37) 516.
 - of Russia, (26) 812; (27) 619.
 - sterilization, (38) 17.
- cherry orchard—
 - analyses, (35) 720.
 - chemical and biological notes, (33) 640.
- Chester loam, (27) 17.
- chlorin absorption, (40) 619.
- chlorin and sulphur content, (30) 422.
- circulation of moist air in, (31) 26.
- circulation of nitrates in, (28) 720; (30) 623.
- citrus, fertilization, (29) 317.
- classification, (26) 421; (27) 117, 320, 515; (28) 515, 537; (30) 621; (31) 719; (32) 200, 618; (35) 319, 812, 899; (36) 210, 813; (38) 512.
- classification—
 - mechanical, (35) 319.
 - mechanical, chemical criteria, and productivity, (40) 120.
 - physical principles, (26) 434.
- clay—*see also* Clay.
 - as affected by hydroxyl ions, (31) 216; (32) 318.
 - as affected by marling, (30) 23.
 - colloids of, (35) 319.
 - fixation of ammoniacal nitrogen by, (29) 127.
 - improvement, (31) 723.
 - in vicinity of Mexico City, Mexico, (35) 19.
 - of Limburg, Netherlands, (38) 513.
 - plasticity of, (26) 220.
- cleaning for microscopic examination, (33) 109.
- climate, and plant growth, relationship, (26) 516.
- Clyde series, (32) 316.
- coconut, analyses, (30) 20.
- coconut, of Malay States, analyses, (32) 420.
- cogon, crop-producing power, (30) 832.
- cogon, improvement, (31) 38.
- cohesion in, (30) 214, 215; (36) 117.
- colluvial, of Missouri, (31) 720.
- Coloma sand, studies, (39) 323.
- colored sandstone, of Germany, (31) 513.
- compaction by tractors, (36) 400.
- composition, (28) 620; (30) 513; (34) 619.
- composition—
 - as affected by moles, (27) 619.
 - affected by rainfall, (35) 514.
 - affected by sewage irrigation, (26) 614.
 - affecting nitrogen utilization, (39) 726.

Soils—Continued.

- composition—continued.
 - terminology, new, (28) 318.
 - variation in, (37) 811.
- conservation, (27) 20.
- copper determination in, (40) 807.
- cotton, of—
 - India, nature, (27) 823.
 - Nyasaland and Uganda, (27) 217.
 - South Carolina, fertilizer requirements, (28) 196.
- course in, elementary, (27) 96.
- course in, extension, (35) 194.
- courses at Iowa State College, (35) 319.
- courses in, (36) 595.
- cranberry, limed, Azotobacter in, (40) 214.
- creatinin in, origin, (26) 815.
- creatinin isolation from, (26) 419, 420.
- crop-limiting factors in, (29) 515.
- cropped and bare, studies, (39) 517.
- Crowley silt loam, (27) 17.
- cultivated—
 - absorption by, (29) 315.
 - absorption of salts by, (34) 324.
 - adsorption phenomena, (27) 20.
 - decline in productiveness, (29) 516.
 - formation of nitrates in, (26) 319.
 - function of humus in, (26) 422.
 - loss of nitrogen and organic matter from, (33) 809; (34) 516.
 - nitrate spots in, (32) 29.
 - nitrate reduction in, (40) 319.
 - of Cuba, (27) 117.
- Cyanophyceae in, (34) 513.
- dark, correlation of humus and mineral matter in, (33) 720.
- decalcification by smoke, (31) 521.
- decomposition of cyanamid and dicyanodiamid in, (40) 724.
- decomposition of peptone and cellulose in, (34) 813.
- deep tillage for, in Great Plains, (39) 812.
- DeKalb, fertilizer experiments, (39) 22; (40) 299, 723.
- DeKalb, fertilizer requirements, (38) 219.
- Delhi, of Sumatra, investigations, (28) 621.
- denitrification in, (27) 424; (29) 817; (32) 618.
- destructive distillation, (33) 120.
- determination of—
 - biological solution, (33) 120.
 - capillary pull, (33) 618.
 - critical moisture content, (32) 719.
 - easily soluble matter in, (26) 519.
 - firmness and plasticity, (27) 320.
 - outer surface, (26) 219.
 - Rhizobia in, (27) 620.
 - surface area, (30) 816.
 - volume weight, (36) 197; (37) 18; (39) 213.
- disinfection, (33) 250; (36) 623; (37) 319, 519.
- disinfection with carbon dioxide, (31) 248.
- distribution of—
 - silt and clay in, (28) 28.
 - vertical pressure in, (35) 581.
- dried, bacteriological studies, (29) 325.
- dried, increased nitrate content, (32) 817.
- drift, of Norfolk, England, (26) 120.
- dry-farm, nitrogen and humus content, (31) 318.
- drying, (27) 121; (28) 622; (33) 810.
- dyamining in the Great Plains, (39) 812.
- effect on—
 - agriculture, (36) 417.
 - availability of fertilizers, (34) 130; (36) 819.
 - burning quality of tobacco, (38) 239.
 - cereals, (26) 814.
 - composition of medicinal plants, (34) 18.
 - composition of wheat, (26) 133; (29) 834; (30) 440; (38) 518.
 - cultivated crops, (33) 825.
 - drainage water, (26) 619.
 - Egyptian cotton, (28) 833.
 - firmness on root development, (30) 136.
 - forest yields, (37) 450.
 - marsh plants, (29) 531.
 - mineral content of feeds, (28) 364.
 - nitrogen relations of crops, (40) 822.
 - pecans, (34) 151.
 - plant varieties, (28) 537.
 - protein content of soy beans, (28) 721.

Soils—Continued.

- effect on—continued.
 - quality of wine, (26) 813.
 - root crops, (29) 577.
 - root development, (26) 328.
 - roses, (28) 342.
 - sal seedlings, (32) 144.
 - strawberries, (31) 534.
 - substances in suspension and in solution, (29) 19.
 - vegetation, (29) 513.
 - wheat, (29) 835.
- ether and chloroform extracts of, (29) 801.
- evaporation—
 - and run-off, (40) 810.
 - of ammonia from (30) 425.
 - of water from, (28) 622, 812; (29) 125, 211; (30) 321; (31) 25; (32) 815; (36) 421.
 - under arid conditions, (26) 220.
- evapo-transpiration ratio, (39) 517.
- exchange of bases in, (28) 517.
- exchange reactions in, (33) 119.
- fallow, nitrification in, (28) 417.
- fallowing experiments, (28) 321.
- Fargo clay loam, (27) 512.
- fermentation of mannite by, (34) 813.
- ferrification in, (36) 813.
- ferro-index, (40) 214.
- ferrous iron in, (30) 719.
- ferruginous—
 - fixation of phosphates in, (30) 722.
 - relation to grape chlorosis, (26) 245.
- fertilizer requirements, (26) 422; (27) 216; (29) 521; (31) 94, 217, 218; (33) 212, 213, 214, 215; (34) 22, 512, 516, 620, 820; (35) 121.
- fertilizer requirements and chemical and mineralogical composition, relation, (31) 621.
- fertilizer requirements, determination, (30) 119; (31) 217; (32) 620; (33) 22, 817; (35) 215.
- fixation of fertilizers by, (32) 721.
- flocculation in, (36) 21.
- forest—
 - absorption of phosphoric acid by, (28) 421.
 - absorption of rainfall by, (31) 515.
 - and cultivated, evaporation from, (37) 418.
 - animal organisms in, (26) 223.
 - as affected by silvicultural practices, (29) 343.
 - bacteria in, (29) 325; (31) 521.
 - composition, (38) 722.
 - formation, (28) 421.
 - nitrate formation in, (30) 624.
 - nitrification in, (40) 418.
 - nitrogen in, (33) 720.
 - of Germany, productiveness, (30) 514.
 - plant food requirements, (26) 744.
 - properties of, (33) 719.
 - review of literature, (35) 720.
 - soluble salt content, (35) 512.
 - studies, (30) 515.
 - treatise, (26) 338.
- formation, (30) 513; (31) 719; (34) 619.
- formation and properties, (34) 326.
- freezing and thawing, (39) 125.
- freezing-point lowering, (39) 11, 18, 323.
- from crystalline rocks, studies, (27) 415.
- frozen, bacteria in, (26) 520, 816; (27) 720; (32) 33; (33) 720; (35) 723; (36) 220; (40) 513.
- frozen, dynamic processes in, (33) 421.
- fruit, of Pennsylvania, (28) 143.
- fumigation, (32) 245, 246; (38) 457.
- fungus flora, (27) 728; (28) 524; (37) 718.
- glacial, of Indiana, (29) 815.
- Gola's osmotic theory, (33) 321.
- grain-producing power, (32) 827.
- granitic—
 - and gneiss, of the Corso, (40) 316.
 - of New Hampshire, (32) 126.
 - phosphorus in, (37) 522.
- granulation, (28) 537.
- graphite, effect on plants, (29) 19.
- greenhouse—
 - partial sterilization, (26) 815; (27) 621; (31) 336.
 - "sickness" in, (28) 119.
 - summer treatment, (33) 42.
 - temperature and moisture studies, (32) 535.
- grinding, effect on microorganisms, (36) 116.
- ground limestone for, (33) 220.
- gumbo, analyses, (32) 212.

Soils—Continued.

- gumbo, drainage, (26) 892.
- gumbo, water penetration in, (36) 210.
- gummosis affected, (39) 56.
- Hagerstown clay, (27) 319.
- Hagerstown loam, (27) 512.
- handbook, (28) 619; (29) 193.
- hardpan, drainage, (26) 892.
- heat conductivity, (27) 215.
- heated—
 - biochemical studies, (27) 620.
 - changes in, (30) 123.
 - effect on plant growth, (31) 216.
 - germination of seeds in, (26) 640.
 - studies, (26) 815.
- high moor and mineral, mixing, (28) 717.
- highland, acidity in, (28) 813; (29) 816.
- Houston black clay, (27) 512.
- Houston clay, (26) 517.
- humid—
 - and arid, nitrifying powers, (36) 119.
 - excess of soluble salts in, (38) 418.
 - magnesium carbonate in, (31) 815.
- humus—
 - as affected by fertilizers, (28) 520.
 - colloids of, (35) 319.
 - content, chlorin index, (40) 619.
 - content, determination, (26) 406.
 - extracted, productiveness, (34) 516.
 - of Java and Malay Peninsula, (34) 811.
 - substances of, (28) 518.
- hydrogen-ion concentration, (38) 620.
- hydrogen-ion concentration—
 - as affected by fertilizers, (39) 424.
 - determination, (34) 504.
- hydrolysis and oxidation of salts in, (39) 522.
- hydrolytic ratio, (38) 511.
- hygroscopic coefficient, determination, (29) 724; (35) 812; (36) 320; (38) 210.
- hygroscopic moisture of, (26) 218.
- hygroscopicity, (26) 220; (27) 110, 120; (30) 215; (31) 16.
- impervious clay, reclamation, (33) 430.
- imperviousness, effect on plant growth, (27) 500; (28) 29.
- improvement, (28) 30; (29) 820; (31) 421; (37) 813.
- improvement—
 - by timber, (26) 140.
 - relation to cattle feeding, (26) 873.
 - treatise, (28) 622, 632.
- increase of plant food in, (30) 517.
- increasing organic matter in, (29) 540.
- Indian alluvium, nitrification as affected by
 - potsherds, (40) 24.
- indigo, of Bihar, (40) 620.
- infertile, cause, (27) 819.
- inoculated, tests, (26) 521.
- inoculating alfalfa with, (29) 332.
- inoculation—
 - experiments, (32) 818; (39) 116.
 - methods, (26) 372.
 - natural, notes, (26) 723.
 - notes, (27) 322; (28) 197; (29) 417; (32) 320, 399.
 - preparations, tests, (28) 426; (30) 718.
 - review, (27) 128; (34) 218.
 - status of, (26) 520.
 - under lime deficiency, (29) 820.
 - with Azotobacter, (40) 617, 832.
- inoculum, "all crops," (39) 519.
- inorganic composition, (31) 719.
- inorganic phosphates, (27) 21.
- insect fauna of, (30) 154.
- interior surfaces, (39) 215.
- iron in, studies, (40) 726.
- irrigated—
 - drainage, (27) 686; (29) 684; (31) 684; (37) 186.
 - evaporation from, (27) 121.
 - management, (33) 827.
 - movement of water in, (27) 819.
 - nitrates in, (37) 120.
- judging, (28) 420; (30) 119, 123, 124, 213, 628; (31) 616; (32) 321; (33) 97; (35) 721; (36) 322.
- Karoo, analyses, (26) 469.
- Karoo, of South Africa, (31) 418.
- laboratory manual, (29) 598; (34) 693.
- laboratory work in, (35) 93.
- lateral percolation of contaminating liquids in, (31) 216.

Soils—Continued.

- lateritic, studies, (33) 813.
- lateritization, (28) 812.
- lava, of Hawaii, studies, (33) 418.
- lawn, notes, (27) 346.
- leaching experiments, (35) 514.
- lessons on, (26) 392; (28) 298, 393; (29) 395; (31) 394; (32) 596, 795; (33) 494, 617, 696; (35) 592.
- light—
 - mixing with clay, (34) 819.
 - sandy, irrigation and fertilizer experiments on, (33) 286, 287.
 - sandy, water economy of, (33) 287.
- lime compounds in, (26) 322.
- lime distribution and loss in, (29) 128.
- lime-magnesium ratio in (26) 723.
- lime requirement, (27) 216; (28) 122, 820; (29) 797; (31) 112, 726; (32) 30, 296, 311, 609, 610; (33) 622; (34) 221, 814; (35) 21, 714; (36) 210, 519, 822; (37) 124, 212, 420, 622.
- lime requirement—
 - as affected by fertilizers, (39) 623.
 - as affected by grinding, (35) 212.
 - as affected by heat, (40) 720.
 - determination, (29) 797; (30) 422; (32) 296, 311, 609, 610; (35) 714; (36) 622; (37) 212, 622; (39) 322; (40) 213, 720.
 - relation to aluminum content, (39) 115.
 - relation to bacterial activity, (39) 325.
 - relation to green manuring, (39) 424.
 - relation to growth of clover, (35) 516.
- limed and unlimed, carbon dioxid content, (36) 197.
- lithium in, (34) 323.
- loam and sandy, loss of plant food from, (30) 22.
- loam, distribution of constituents in, (31) 618.
- loess—
 - composition, (27) 499.
 - infertility of subsoils, (37) 20.
 - of Nebraska, (35) 510, 809, 810.
 - southwestern Indiana, (32) 718.
 - southwestern Ohio, (32) 122.
 - transition region, composition, (28) 28.
 - transition region of Nebraska, (34) 806.
 - origin, (27) 216; (29) 415.
 - water-soluble material in, (36) 421.
- loss of—
 - ammonia from, (27) 21.
 - calcium, studies, (39) 517.
 - fertilizers from, (29) 211; (35) 812.
 - plant food from, (35) 623.
- lysimeter experiments, (27) 19; (29) 125; (31) 24; (39) 517.
- management, (26) 422, 717; (28) 537; (31) 318; (35) 30, 516; (36) 119, 813; (38) 719.
- management, treatise, (31) 719.
- manganiferous, of Oahu, Hawaii, (27) 118.
- manual, (29) 315; (33) 95.
- manured, loss of ammonia from, (27) 21.
- manurial, of Mysore, analyses, (28) 223.
- mapping, (27) 216, 720; (32) 26; (34) 321.
- mapping, geological, in southern Bavaria, (28) 717.
- mapping in Germany, (28) 620.
- Marion silt loam, (27) 18.
- marling, (29) 19.
- marsh, *see* Marsh soils.
- Marshall silt loam, (27) 512.
- meadow, fertilizer experiments on, (35) 516.
- meadow, phosphoric acid and potash requirements, (26) 424; (40) 22.
- mechanical treatment, importance, (26) 424.
- Miami clay loam, (27) 512.
- Miami series, (32) 317.
- microbiological reaction of, (28) 425.
- microbiology of, (26) 372.
- mineral—
 - consistency curves, (33) 420.
 - constituents, (28) 215.
 - plant food content, factors affecting, (26) 814.
- mineralogical analysis, (28) 812; (29) 19; (31) 206.
- mineralogical analysis, treatise, (35) 16.
- misconceptions concerning, (33) 721.
- moistened, rise of temperature, (39) 617.
- moistening, (33) 322.
- moistness, interpretation of field observations on, (40) 211.
- mold action in, (40) 122, 318, 721.
- moor, *see* Moor and Peat.
- morphology, (28) 515.

Soils—Continued.

- muck, *see* Muck soils.
- niter, reclamation, (38) 323.
- niter spots in, (34) 811, 812; (36) 423.
- niter spots in, origin, (32) 199; (33) 121.
- nitrate formation in, (27) 721; (29) 818.
- nitrate in, (26) 723; (27) 419.
- nitrate in, movement, (28) 813.
- nitric nitrogen in, (27) 418.
- nitric nitrogen in, effect of salts, (40) 722.
- nitric nitrogen in, movement, (26) 616.
- nitrification in, (26) 722, 816; (27) 419; (28) 814; (29) 621; (30) 23, 399, 516; (31) 318, 420, 516, 722, 818; (33) 421; (36) 118, 513; (37) 318; (38) 211.
- nitrifying power, (27) 517; (34) 218, 813.
- nitrifying power—
 - as an index to fertility, (32) 96.
 - determination, (31) 26.
- nitrogen—
 - and ammonia consuming power, (35) 730.
 - balance in, (27) 21.
 - carbon, and humus ratios, (28) 217.
 - content—*see also* Ammonification, Nitrification, and Nitrogen.
 - as affected by bacteria, (31) 731.
 - as affected by clover, (27) 322.
 - cycle, (27) 517.
 - distribution in, (37) 517.
 - economy of, (26) 319.
 - fixation in, (29) 621; (34) 422.
 - metabolism of, (32) 514.
 - supply, maintenance, (37) 425.
 - transformation in, (26) 721; (30) 717; (31) 722, 818; (34) 423, 619.
- nitrogenous compounds of, (32) 721.
- nonprotein nitrogen of, (35) 120.
- Norfolk sandy loam, (26) 120; (27) 512.
- nucleic acids in, (26) 814.
- of Abyssinia, notes, (30) 434.
- Alabama, (27) 417.
- Alabama and west Florida, (37) 810.
- Alabama, Macon Co., (30) 19.
- antarctic region, studies, (30) 818.
- Antigua, (35) 214.
- Antigua, "gall patches" in, (37) 421.
- Arad plains, (30) 213.
- Argentina, analyses, (26) 719; (31) 215.
- Argentina, studies, (30) 119.
- arid and humid regions, (27) 117.
- arid regions, bacteriology, (27) 822.
- Asiatic Russia, investigations, (26) 621.
- Auckland, analyses, (26) 318.
- Belgian Congo, analyses, (34) 718; (37) 622.
- Bessarabia, studies, (30) 320.
- Bihar, phosphate depletion, (38) 118.
- Boston Common, rejuvenating, (26) 240.
- British Guiana, analyses, (30) 421.
- Burirhat Station Farm, analyses, (27) 417.
- Burma, Yamethin District, analyses, (28) 516; (29) 736.
- Cahuilla Basin, (33) 215.
- California, analyses, (34) 324.
- California, distribution of humus in, (29) 415.
- California, humus content, (30) 714.
- California, management, (30) 625.
- California, manual, (30) 420.
- Canal Zone, (27) 19.
- Cape Colony, analyses, (35) 20.
- Cape of Good Hope, (33) 419.
- Central Park, New York City, (26) 222.
- Chile, radioactivity, (27) 520.
- citrus groves, studies, (39) 421.
- Coastal Plain of Virginia, (28) 422.
- Colorado, ammonifying efficiency and algal content, (29) 819.
- Colorado, nitrates in, (31) 619.
- Colorado, nitrifying efficiency, (30) 818.
- Coquimbo, Chile, analyses, (27) 431.
- Cuba, analyses, (36) 511.
- Cuba, analyses and fertilizer needs, (29) 416.
- Cumberland Plateau, improvement, (30) 820.
- Delaware, fertilizer and lime requirements, (39) 116.
- Deli, analyses, (30) 320.
- Department of Yonne, studies, (26) 519.
- Dutch East India, fertilizer needs, (28) 717.
- Dutch East Indies, (30) 697; (38) 542.
- Dutch East Indies, mineralogy of, (35) 119.
- East Africa Protectorate, (28) 423; (33) 512.
- East Friesland, (30) 321.

Soils—Continued.

- of East Indies, papers on, (39) 423.
- of Eastern United States, (26) 119, 222, 517; (27) 17, 319, 500, 617.
- Egypt, formation of sodium carbonate in, (28) 719.
- Egypt, papers on, (28) 416.
- Egypt, permeability, (29) 816.
- Egyptian Delta, improvement, (33) 420.
- experimental farms in Burma, (36) 323.
- Fiji, analyses, (35) 320; (36) 319.
- Florida, analyses, (35) 319.
- Florida, classification and use, (29) 416.
- Florida Everglades, analyses, (29) 315.
- Florida, iron content, (32) 319.
- Georgia, geography, (32) 811.
- Georgia, Jones Co., analyses, (36) 812.
- German East Africa, studies, (28) 423.
- German Southwest Africa, analyses, (27) 513; (31) 620.
- Germany, climatic types, (33) 718.
- Gezira, notes, (26) 719.
- glacial drift sheets, composition, (32) 812.
- Gloucestershire, Somerset, and Wiltshire, England, (35) 721.
- Great Interior Valley of California, (32) 28.
- Guam, analyses, (40) 328.
- Hartford quadrangle, Kentucky, (29) 513.
- Hauraki Plains, analyses, (32) 420.
- Hawaii, (33) 122, 812.
- Hawaii—
 - absorptive power for fertilizers, (31) 723.
 - analyses, (35) 503.
 - composition, (36) 618.
 - humus content, (27) 7.
 - nitrogen transformation in, (32) 719.
 - studies, (36) 813; (37) 515.
- Highland Rim, improvement, (30) 821.
- Hood River Valley, analyses, (32) 812.
- Hudson Valley, New York, (34) 417.
- Hungary, notes, (31) 814.
- Iceland, treatise, (30) 119.
- Idaho, (33) 21; (37) 20.
- Idaho, Latah Co., (39) 616.
- Illinois, (36) 618.
- Illinois, Champaign Co., (40) 514.
- Illinois, Knox Co., (31) 23.
- Illinois, La Salle Co., (29) 727.
- Illinois, studies, (26) 518; (28) 31, 421.
- Imperial Valley, Calif., analyses, (36) 790.
- India, bacteriological analyses, (29) 220.
- India, nitrogen content, (31) 215.
- Indiana—
 - analyses, (35) 19.
 - excess soluble salts in, (39) 421.
 - fertilizer requirements, (38) 219.
 - Fulton Co., (40) 316.
 - improvement, (39) 220.
 - lime requirement, (38) 219.
 - liming experiments, (39) 429.
 - manure for, (40) 514.
 - phosphorus requirement, (39) 220.
- Iowa—
 - analyses, (34) 20.
 - analyses and fertility, (32) 211; (34) 723.
 - bacterial content, (28) 627; (29) 515.
 - classification, (36) 619.
 - lime requirement, (35) 727.
 - management, (39) 812.
 - Muscatine Co., (40) 216.
 - Pottawattamie Co., (40) 216.
 - sulphur content, (34) 27.
- Java, (33) 419; (38) 513.
- Java—
 - and Sumatra, studies, (30) 420.
 - fertilizer needs, (32) 217.
 - hygroscopicity, (30) 215.
 - studies, (27) 720.
- Johore, analyses, (35) 320.
- Kamerun, analyses, (29) 727.
- Kankakee marsh region, reclamation, (30) 518; (33) 22.
- Kansas—
 - analyses, (32) 26.
 - decreased crop-producing power, (33) 809.
 - fertilizer requirements, (39) 815.
 - Montgomery Co., (40) 320.
 - sulphur content, (37) 119.

Soils—Continued.

- of Kentucky, (34) 121.
- Kentucky—
 - distribution of phosphorus in, (36) 424.
 - fertility studies, (39) 421.
 - fertilizer requirements, (35) 121.
 - manganese content, (31) 720.
 - Webster Co., (27) 823.
- Kuala Pilah and Jelebu districts, Malay States, (36) 115.
- Libyan desert, analyses, (30) 20.
- lower Rhine districts, (34) 811.
- Lüneburg Heath region, (33) 418.
- Luzon, analyses, (31) 619.
- Macedonia and Epirus, (28) 216.
- Madagascar, analyses, (35) 119.
- Madagascar and West Africa, (32) 512.
- Maine, Aroostook Co., (35) 19; (38) 620.
- Malay, acidity, (33) 512.
- Malay, analyses, (29) 727.
- Maryland, (37) 514.
- Maryland, Prince George's Co., (27) 319.
- Massachusetts, analyses, (26) 29.
- Massachusetts and Connecticut, (32) 835.
- Mauritius, absorptive power, (34) 816.
- Mauritius, analyses, (38) 513, 514.
- Michigan, (39) 512.
- Michigan, phosphorus requirement, (39) 322.
- Michigan, Wayne Co., classification, (31) 619.
- Minnesota—
 - origin, (29) 830.
 - phosphate requirement, (40) 320.
 - radioactive content, (33) 417.
- Mississippi, (29) 416; (35) 213, 625.
- Mississippi, studies, (26) 811.
- Missouri, (39) 813.
- Mohawk Valley, New York, (34) 718.
- Morocco, (39) 616.
- Nebraska, bacteria in, (29) 733.
- Nebraska, nitrogen content, (28) 216.
- Netherlands, (32) 215.
- Neva drainage basin, (26) 621.
- New Jersey, (27) 513.
- New Jersey, Freehold area, analyses, (38) 214.
- New Jersey, manurial requirements, (31) 421.
- New Mexico, analyses, (40) 785.
- New South Wales, analyses and value, (26) 29.
- New South Wales, studies, (26) 216; (28) 319, 621.
- New York, (32) 28; (37) 317.
- New York, bacterial content, (26) 719.
- New York, studies, (36) 21.
- New Zealand, analyses, (28) 319; (29) 728, 730; (34) 617; (35) 715; (36) 723.
- New Zealand, lime requirements, (37) 622.
- North Carolina, (36) 323; (37) 625.
- North Carolina—
 - chemical and mineral analyses, (31) 621.
 - coastal plain, fertilizer needs, (31) 629.
 - maps, (33) 780.
 - petrography, (34) 512.
- North Wales, (34) 323.
- northeast Indian tea districts, (40) 20.
- northern Italy, origin and composition, (27) 513.
- northern New York, (35) 509.
- northern Wales, studies, (38) 116.
- Northwest, fertilizer requirements, (29) 821.
- northwest Minnesota, (33) 617.
- Norway, (34) 16.
- Norway, hardpan in, (26) 620.
- Nova Scotia, (36) 723.
- Nova Scotia, analyses, (33) 718; (34) 617; (35) 118.
- Nyasaland, analyses, (31) 620.
- Nyngan demonstration farm, analyses, (26) 30.
- Obrigheim and Colgenstein, Bavaria, (29) 125.
- Ohio, (36) 620.
- Ohio—
 - Clermont and Paulding Counties, (34) 896.
 - composition, (30) 817.
 - drainage for, (39) 217.
 - fertilizer requirements, (39) 217.
 - southern counties, (37) 514.

Soils—Continued.

- of Olifants River irrigation scheme, (31) 418.
- Oregon, (27) 719.
- Oregon, studies, (32) 420.
- Ozark upland region, (38) 217.
- Palatinat, absorptive capacity, (26) 319.
- pampas of Argentina, (36) 886.
- Paraguay, analyses, (34) 15, 323.
- Pennsylvania, (32) 616; (33) 811.
- Peru, phosphoric acid content, (35) 118.
- Perugia, Italy, (34) 810.
- Philippines, analyses, (26) 318.
- Philippines, nitrification in, (34) 718.
- Poland, notes, (26) 318.
- polar and subpolar regions, structure, (31) 23.
- Porto Rico, south coast, (33) 121.
- Porto Rico, studies, (29) 17, 622, 815.
- Posen, composition, (26) 423.
- prairie regions of Alabama and Mississippi, (27) 33.
- Quebec, analyses, (37) 22.
- Quebec and Ontario, analyses, (29) 233.
- Queensland, analyses, (27) 217; (28) 516, 620; (30) 421; (33) 22; (35) 20; (40) 314, 415.
- rice localities, microfauna of, (33) 23.
- rocky deserts of Turkestan, (30) 213.
- rubber producing regions, (33) 512.
- Russia, classification¹ (28) 423.
- Russia, nitrogen-fixi^g bacteria in, (38) 428.
- Rutherglen Experiment Farm, analyses, (31) 513.
- Sabak district, Malay States, (36) 322.
- Sahel, analyses, (31) 814.
- St. Croix, analyses, (31) 133.
- San Luis Province, Argentina, (34) 512.
- San Luis Valley, Colorado, (27) 18.
- Sao Paulo, Brazil, analyses, (36) 210.
- Savoy, (35) 346.
- Scania, Sweden, nitrogen content, (32) 123.
- semiarid region, management, (32) 215.
- Shenandoah River terrace, (27) 18.
- Sierra Leone, (34) 512.
- Sierra Nevada foothills, (33) 286, 618.
- small areas, studies, (26) 516.
- South Africa, analyses, (29) 514; (31) 119; (38) 411.
- South Australia, (35) 119.
- South Australia, analyses, (31) 720.
- South Carolina, lime for, (28) 726.
- south-central Texas, (38) 324.
- South Dakota, notes, (29) 19.
- South Russia, humus content, (32) 718.
- south Texas, analyses, (30) 420.
- southeast England, analyses, (26) 119.
- southeastern Manitoba, (31) 839.
- southern Italian Somaliland, (29) 416.
- southern Italy, lateritic nature, (33) 813.
- southern New Jersey and their uses, (40) 19.
- southern New York highland region, (33) 511.
- southern peninsula of Michigan, (28) 422.
- southern Rhodesia, (37) 212.
- Sulphur Spring Valley, (29) 725.
- Sussex area, N. J., composition, (30) 622.
- Sutter Basin, Calif., (29) 125.
- Sweden, classification, (28) 620.
- Tamar River Valley, (30) 214.
- Tasmania, analyses, (28) 621.
- Tennessee, (34) 323; (35) 795.
- Tennessee—
 - bibliography, (26) 812.
 - lime for, (29) 25; (39) 120.
 - nitrogen economy, (38) 212.
 - Robertson Co., (28) 516.
- Texas, (33) 417, 788.
- Texas, fungus flora, (36) 434.
- Texas, investigations, (28) 197.
- Texas Panhandle, (34) 124.
- Transvaal, analyses, (27) 639; (33) 813.
- Tripoli, (27) 618.
- Tripoli, composition, (28) 620.
- Tripoli, solutions of, (34) 323.
- tropical South America, (30) 622.
- Tularosa basin, New Mexico, (33) 785.
- Tunis, (31) 492.
- Turkestan, classification, (26) 621.
- Ugogo, German East Africa, (28) 320.
- Umatilla project, (38) 422.

Soils—Continued.

- of United States—
 - classification, (30) 19.
 - studies, (28) 117.
 - types, (27) 512.
- Uruguay, analyses, (36) 114.
- Uruguay, analyses and classification, (30) 623.
- Utah, studies, (29) 18.
- Vevey, Switzerland, (37) 212.
- Virginia, (30) 319.
- Virginia, phosphate requirement, (39) 22.
- Virginia, studies, (28) 620.
- west Tennessee, reclamation, (30) 19.
- West Virginia, analyses, (36) 722; (40) 420.
- western Australia, fertility, (29) 315.
- western New York, (33) 121.
- western Washington, (34) 418.
- wine district of Arad-Hegyalja, (30) 213.
- Yorkshire, lime requirements, (40) 128.
- Yser valley, inundation, (33) 512.
- Orangeburg sandy loam, (26) 120, 222; (27) 512.
- orchard, dynamiting experiments, (33) 239.
- orchard, nitrates in, (36) 724.
- organic matter in, *see also* Organic matter.
- organic matter in, (28) 418, 519; (29) 817; (30) 516; (33) 421; (36) 512, 815; (37) 20, 121, 216.
- organic matter in—
 - decomposition, (26) 616; (38) 117; (40) 213.
 - determination, (39) 11, 312.
 - maintenance, (37) 215.
- organic nitrogen in, (31) 11.
- organic phosphorus in, (36) 212.
- osmosis in, (26) 217; (29) 124; (30) 23; (31) 720; (33) 420; (35) 16.
- osmotic pressure, effect on bacterial activity, (40) 722.
- oxidation of sulphur in, (30) 222.
- oxidizing power, (35) 624; (37) 811.
- packed and unpacked, moisture content, (27) 320.
- packing experiments, (29) 223.
- pakihi, of New Zealand, (31) 419.
- pasture, English work on, (28) 216.
- pasture, nitrification in, (30) 399; (31) 516.
- peat, *see* Peat and Moor.
- penetration by fertilizers, (27) 420.
- penetration by frost, (26) 619.
- Penn loam, (27) 17.
- pervious, loss of nitrates from, (37) 23.
- phosphoric acid in—
 - availability, (26) 321.
 - concentration, (27) 418.
 - fixation, (37) 423.
 - notes, (27) 500; (38) 117.
- phosphorus requirements, (29) 417.
- physical—
 - character as affected by calcium oxid, (40) 622.
 - constants of, (26) 29.
 - processes in relation to temperature, (34) 216.
 - properties, (27) 120; (31) 215.
 - properties, importance in soil judging, (31) 514.
 - properties, relation to crop yields, (33) 815.
 - properties, studies, (26) 219; (33) 420.
- physico-chemical studies, (30) 215; (35) 21, 624.
- physics of, (28) 416.
- "physiological depth" of, (31) 26.
- Piedmont, of North Carolina, (33) 417.
- pineapple, analyses, (29) 210.
- pine-covered sand dune, investigations, (27) 217.
- plinery and orchard, of Cape of Good Hope, (27) 217.
- plant food for, (33) 516.
- plant food production in, (30) 624.
- plasticity, (32) 617.
- plasticity and firmness, (28) 320.
- plowing and cultivation, (29) 31.
- podzol—
 - analyses and absorptive power, (33) 814.
 - classification, (28) 515.
 - composition, (30) 214.
 - formation, (33) 814.
 - movement of iron in, (30) 216.
 - of Middle Norland, Sweden, (35) 720.
- polder, of Netherlands, salt content, (27) 515.
- polygon, of Iceland, (30) 515.
- porosity, (31) 486.
- porous, effect on fertilizers, (28) 423.

Soils—Continued.

- potash content, (27) 323, 500.
- potash solubility in, as affected by gypsum, (39) 521.
- potassium adsorption by, (34) 817.
- potassium liberation from, (33) 517.
- prairie, phosphorus in, (36) 514.
- preparation, (28) 291.
- productive and unproductive, examination, (30) 819.
- productivity—
 - as affected by dry air storage, (34) 812.
 - determination, (38) 812.
 - of different layers, (34) 215.
- protein decomposition in, (36) 25.
- protein nitrogen in, distribution, (39) 204.
- protooses and peptones in, (34) 325.
- pseudo-isotropic, heat movement in, (31) 24.
- pumice, of New Zealand, notes, (27) 513.
- quicklime conversion in, (40) 622.
- radiating power, (29) 618.
- radioactive emanations of, (31) 20.
- radioactivity, (27) 500; (28) 30; (31) 418.
- radioactivity, treatise, (33) 809.
- radium and thorium emanations in, (27) 418.
- rarer elements in, (38) 409.
- rawness of subsoils, (39) 620, 621; (40) 121.
- reaction—
 - and basicity of, (30) 623.
 - of, (34) 504; (38) 620.
 - of, determination, (36) 505; (38) 419.
 - relation to grinding, (34) 112.
 - with chemicals and behavior of equilibrium, (39) 11.
- red—
 - analyses, (32) 723.
 - chemical and physical nature, (28) 421.
 - clay, fertilizers for, (33) 517; (36) 323.
 - clay, of Porto Rico, (30) 815.
 - colloidal properties, (32) 818.
 - fertilizer requirements, (29) 623.
 - formation, (29) 514, 622; (31) 513.
 - laterite, of Europe, (27) 513.
 - of Brazil, (30) 622; (35) 725.
 - Italy, origin, (39) 513.
 - Karstian, analyses, (35) 721.
 - Limburg, Netherlands, (38) 513.
 - Mediterranean region, (36) 115.
 - properties, (31) 618.
 - sandstone of Germany, (26) 121.
 - reduction of salt content, (29) 32.
 - reduction phenomena, (40) 214.
 - relation between unfree water and heat of wetting, (40) 20.
- relation to—
 - asparagus culture, (26) 640.
 - climate and weather, (34) 514.
 - fertilizer requirements of crops, (28) 722.
 - forests, (38) 542.
 - fungi, (27) 728.
 - grape rot, (28) 349.
 - meteorological factors, (28) 116; (35) 15.
 - mineral composition of parent rocks, (28) 622.
 - plants, (29) 212; (31) 791.
 - potato leaf-roll, (27) 447.
 - stem diseases, (26) 646.
 - weeds, (27) 29, 417; (29) 30, 523.
- relative unilateral impoverishment by various crops, (39) 724.
- respiration of bacteria in, (27) 122.
- review of investigations, (27) 417; (28) 325, 717; (30) 119; (31) 723; (33) 512, 717; (35) 516.
- role of—
 - Actinomycetes in, (36) 518.
 - spore-forming bacteria in, (36) 517.
 - Streptothrix in, (27) 620.
- rubber, of Malay States, analyses, (32) 420.
- rubber, requisites of, (28) 422.
- saline—
 - of Egypt, drainage, (35) 685.
 - of Mediterranean coast, (28) 620.
 - plant life on, (40) 221, 424.
 - studies, (28) 516.
- salt in, determining by freezing-point method, (40) 315.
- salts in, movement, (33) 513.
- salts in, relation to cultivated plants, (28) 426; (31) 627.

Soils—Continued.

- salt-treated—
 - effect on absorption by seeds, (37) 527.
 - moisture equivalent, (39) 215.
- sampler, description, (34) 513, 811; (37) 811.
- samples—
 - collecting and testing, (26) 221.
 - preparation for study, (30) 422.
 - variability, (39) 815.
- sampling, (28) 215; (35) 121; (36) 617; (37) 719, 811; (39) 618, 629; (40) 317.
- sampling apparatus for, (30) 421, 838.
- sandy—
 - analysis methods, (31) 719.
 - and clayey, oat sickness in, (32) 442.
 - and pebbly, of Finland, (36) 813.
 - as affected by humus, (31) 732.
 - green manuring experiments, (26) 224; (30) 24.
 - improvement, (27) 899; (28) 32; (31) 723; (32) 124; (33) 121.
 - lime requirements, (31) 726.
 - loam, salts in, (30) 517.
 - management, (28) 815; (33) 325.
 - nitrogen fixing power, (33) 619.
 - of Michigan, (27) 720.
 - of Tripoli, (27) 217.
 - pine plain, of Wisconsin, (39) 115.
 - treatment with moor soil, (30) 625.
 - utilization, (26) 621.
- Sassafras series, (32) 512.
- saturation formula for, (33) 816.
- seepy, drainage, (26) 892.
- semiarid—
 - movement of salts in, (28) 421.
 - nitrification in, (36) 422.
- sewage purification by, (35) 383.
- sewage-sick, investigations, (28) 119, 623.
- sewage-sick, protozoa from, (29) 316.
- shifting, grass for, (39) 441.
- shrinkage, (38) 321; (40) 419.
- shrinkage and friability, (27) 120.
- sick, investigations, (28) 119.
- sick, treatment, (27) 824, 847.
- slick spots in, (39) 229.
- slime formation in, (29) 723.
- solubility—
 - of manganese in, (28) 813.
 - of nitrogenous compounds in, (29) 108.
 - studies, (33) 513.
- soluble salt content, (40) 512.
- specific gravity, (33) 206.
- sponge spicules in, (27) 500, 622.
- steamed, chemistry of, (28) 417, 418.
- steamed, reinoculation, (27) 499; (28) 30.
- sterilization, (26) 322; (28) 324, 623; (32) 321, 423, 620; (35) 21; (36) 518; (37) 213, 319, 421, 519, 719; (38) 17, 420, 514, 556, 720.
- sterilization—
 - and disinfection of, (31) 621.
 - by antiseptics, (32) 816.
 - by caustic lime, (29) 730; (30) 399; (31) 519.
 - by lime, (32) 32.
 - effect on bacterial growth, (28) 329.
 - effect on plant food production, (29) 122.
 - experiments, (40) 147.
 - in forcing houses, (31) 336.
 - partial, (27) 722; (28) 538; (31) 27; (35) 515; (40) 23, 619.
 - review of investigations, (28) 815.
 - studies, (29) 221.
- sterilized—
 - and reinoculated, water-soluble matter in, (29) 22.
 - effect on crop yield, (30) 217.
 - effect on plant growth, (30) 225.
 - nitrate reduction in, (31) 121.
 - productivity, (31) 819.
 - solubility of phosphoric acid in, (28) 417.
- stored, nitrogen content, (39) 421.
- subarctic, unusual features, (38) 732.
- sugar inversion by, (40) 123.
- sulfification in, (36) 22.
- sulfification in as affecting nitrogen transformations, (39) 823.
- sulfifying power, (31) 318; (37) 119.
- sulphates in, determination, (39) 12.
- sulphur—
 - bacteria in, (33) 23.
 - in, (30) 20.

Soils—Continued.

sulphur—continued.

- oxidation in, (34) 19.
- transformation in, (33) 815
- treatment, (34) 540.
- surface area, (33) 216; (34) 419.
- surface forces, measurement, (35) 733; (36) 319
- Susquehanna fine sandy loam, (26) 518.
- swamp, *see* Swamp.
- swamping, (27) 121.
- tea, of Java and Sumatra, (39) 423.
- testing, (31) 215.
- textbook, (33) 398; (38) 196; (40) 396.
- thermal diffusivity and water content, (28) 421.
- thufur or hilly, of Iceland, (30) 515.
- tillable, of Roumania, (27) 217.
- tillage, (29) 634; (33) 97.

tobacco—

- analyses, (35) 720; (36) 628.
- cultivation, (36) 513.
- of Deli, (29) 815.
- of Java, (37) 419.
- toxicity, amelioration, (37) 519
- toxicity due to aldehydes, (40) 22.
- toxins of, (39) 423; (40) 23, 728.
- translocation of calcium in, (40) 719.
- translocation of salts in, (38) 417.
- treatise, (26) 215; (27) 821; (31) 118, 719; (34) 321, 716, 793; (35) 214, 421; (36) 114, 617.
- treatment, (26) 520, 539.
- Trinity clay, (26) 119.

tropical—

- Azotobacter in, (30) 218.
- black color of, (34) 217.
- fertilizer needs, (31) 723.
- mechanical analyses, (26) 719.
- selection, (29) 727.
- truck, of Atlantic coast region, (29) 416.
- usar and regur, of India, (29) 514.
- use and abuse, (27) 95.
- valuation, (37) 18.
- value of field study, (26) 434.
- vanillin in, (40) 24.
- variability in and its significance, (39) 815.
- ventilation and drainage, (34) 217.
- viable weed seeds in, (29) 536.
- virgin and cultivated, bacterial activity, (32) 216.
- volcanic, of Japan, (29) 18.
- volcanic, of St. Vincent, (37) 420.
- volcanic, petrography, (32) 419.
- Volusia loam, (27) 18, 319.
- Wabash clay, (26) 119.
- warping, in England, (29) 514.
- washing, (39) 322.
- water capacity, (26) 218, 619; (28) 622; (31) 313; (34) 494.
- water capacity and hygroscopic coefficient, (37) 117.
- water capacity, minimum, (30) 121.
- water content, (37) 116.
- water-logged, infertility, (37) 19.
- water-logged, reclamation, (33) 88, 392.
- water movement in, (26) 619; (28) 219.
- water-soluble nutrients in as affected by lime, (40) 124.
- water-supplying power, (34) 721.
- wet and dried, bacterial activity, (27) 121.
- wet, importance of draining, (28) 796.
- wheat, of Cape Province, (37) 622.
- white, notes, (30) 213, 515.
- white, of upper Weser River, (31) 513; (34) 16.
- wilting coefficients, (31) 522; (40) 22.
- Wisconsin drift, management, (34) 722.
- zeolitic compounds in, (33) 119.

Solanaceae—

- abscission in, (39) 226.
- tokra disease, (39) 146.

Solanaceous plants, brown rot of, description, (31) 745.

Solandra longiflora, toxicity, (38) 782.

Solangustin, isolation and properties, (32) 309.

Solanin—

- as a potato poison, (34) 164.
- determination in tomatoes, (34) 255.
- effect on potatoes, (28) 528.

Solanum—

- angustifolium, constituents of, (32) 309
- caldasii, bud mutations in, (33) 222.
- commersonii—
 - culture experiments, (28) 738.
 - description and culture, (36) 637.
 - mutations in, (35) 330.
 - tests, (26) 437.
 - tubers of, (31) 529.
 - variation in, (28) 130.
- darwinianum, notes, (32) 726.
- elaegnifolium, chymase of, (36) 412.
- fendleri hybrid, studies, (40) 131, 241.
- graft hybrids of, (33) 429.
- grafts between various species, (31) 740.
- incanum, analyses and digestibility, (27) 871; (32) 167.
- lycopersicum, carotinoid content, (31) 803.
- maglia, bud mutations, (27) 230.
- muricatum, tests, (27) 741.
- n. spp., descriptions, (31) 425.
- nigrum—
 - crossing experiments, (35) 445.
 - crossing with prairie berry, (34) 146.
 - mineral nutrition, (28) 224.
- rest periods, (40) 223.
- rostratum, description, (38) 539.
- spp., bud mutations of, (28) 530.
- spp., bud variations in, (29) 829; (30) 433, 529, 730.
- spp., studies, (26) 529.
- spp., variations in, (26) 433.
- torbum, grafting eggplants on, (33) 139.
- tuberosum, endophytic endodermal fungus in, (32) 643.
- tuberosum, origin, (31) 833.
- tubingense, description, (27) 31.
- wild tuberiferous, descriptions, (31) 824.

Solar—

- activity—
 - and atmospheric optical phenomena, (34) 614.
 - and planetary phenomena, (35) 618.
 - relation to rainfall and magnetic storms, (38) 15.
- atmosphere, motion of, (31) 615.
- atmosphere, structure, (38) 811.
- corona, rotation, (34) 414.
- coronae, (38) 812.
- corpuseular rays, (36) 419.
- eclipse at Honolulu, (34) 118.
- halo at Miami, Fla., (36) 718.
- halos, notes, (29) 121; (32) 25; (33) 717.
- photosphere, spectrum and temperature of, (34) 413.
- radiation—
 - and sky radiation at Madison, Wis., (35) 419.
 - as affected by clouds, (28) 815.
- radiation intensities—
 - and air temperature, relation, (32) 24.
 - at Madison, Wisconsin, (28) 315.
 - at Mount Weather, Va., (31) 615; (32) 614.
 - at Washington, (32) 810.
- radiation—
 - measurements, (35) 115; (38) 114.
 - papers on, (33) 320, 717; (34) 413, 614.
 - seasonal variations in, (34) 415.
 - variations in, (37) 417.
- rays, decomposition of water by, (28) 416.
- variability, (35) 619.

Soldier—

- beetles, fungus diseases of, (26) 252.
- bug, green, studies, (32) 247; (37) 258; (38) 197.

Soldiers and sailors—

- agricultural instruction for, (36) 794; (38) 299; (39) 98, 699; (40) 591.
- employment in England and Wales, (35) 296.
- farm work for, (36) 392; (38) 293; (40) 790.
- forestry pursuits for, (40) 898.
- land settlement for, (39) 290, 697; (37) 190; (38) 791; (39) 89, 648, 702; (40) 389, 591, 687, 790.
- rehabilitation, (40) 793.
- rehabilitation, cooperation of agricultural colleges in, (39) 708.

Soldiers, Arab, feeding, (33) 68.

- Solenopsis**—
 debilis, notes, (34) 752.
 geminata, notes, (27) 264; (28) 853; (29) 653; (34) 753; (39) 59.
 geminata rufa, notes, (28) 158.
 molesta, studies, (35) 662.
 sp., parasitic on bee moth, (29) 860.
Solenothrips rubrocinctus, notes, (36) 457.
Sollhyete, Svalöfs, description, (26) 440.
Solidago—
 n.spp., descriptions, (34) 336.
 oleraceus, geographical distribution, (26) 335.
 sparsiflora subcinerea, notes, (29) 441.
 spectabilis, toxicity, (37) 482; (39) 184.
Solids, determination in—
 evaporated milk, (30) 509.
 fruit juices and jellies, (29) 798.
 milk and other fluids, (34) 206.
 wine, (32) 715.
Solubility, determination, (37) 205.
Solutions—
 balanced, and antagonism, (33) 628.
 balanced, penetration of, (35) 823.
 colored, acidity of, (36) 299.
 determination of mineral salt content, (34) 732.
 electrical conductivity, (36) 503.
 equilibria in, (39) 203, 204.
 evaporation apparatus for, (34) 608; (37) 503.
 handling by suction, (37) 503.
 lectures on, (31) 309.
 nutrient, *see* Nutrient.
 standardizing, (38) 204.
Solvents, treatise, (30) 310.
 Somatic cells as affected by strychnin, (26) 229.
 Somatogenic characters, inheritance in, (28) 531.
Sonchus—
 crassifolius, analyses, (33) 466.
 oleraceus, analyses and feeding value, (33) 70.
Soot—
 analyses, (27) 212, 327; (34) 521.
 availability of nitrogen in, (35) 427.
 character and composition, (26) 727.
 dispersal, (27) 212.
 effect on vegetation, (31) 826; (34) 154.
 fertilizing value, (27) 212, 832; (29) 129; (33) 821.
Sootfall in—
 English towns and cities, (30) 619; (34) 15.
 Indianapolis, (32) 254.
 London, (27) 128, 212.
 St. Louis, (38) 115.
Sooty Crambus, notes, (28) 158.
Sooty molds, studies, (27) 848.
 Sorbite as source of carbon for molds, (30) 226.
 Sorbus aucuparia, carotinoid content, (31) 803.
 Sordaria fimicola, notes, (28) 562.
 Sordaria oryzae n.s.p., notes, (37) 148.
Sore—
 head in chickens, (32) 677.
 head in chickens, immunization, (30) 785.
 mouth in dogs, (27) 576.
 mouth in pigs, (31) 879.
 throat—
 epidemic in Baltimore, (28) 674.
 epidemic, relation to milk supply, (28) 580, 674; (31) 174; (33) 577; (34) 473.
 septic, transmission by milk, (27) 177; (32) 269; (37) 273.
 streptococci, sources, (36) 577.
Sorex fumeus umbrinus n.subsp., description, (37) 758.
Sorex n. forms, descriptions, (40) 351.
Sorghum—*see also* Kafir, Milo, etc.
 Amber, yields, (40) 327, 733.
 analyses, (27) 68, 469; (28) 463.
 and cowpea mixture for hay, (39) 129.
 and cowpea silage, digestibility, (31) 863.
 and cowpea silage, mineral constituents, digestibility, (40) 769.
 and cowpeas, sowing experiments, (28) 735.
 aphidid enemies of, (31) 755.
 as affected by bog water, (28) 733.
 affected by climate and weather, (39) 236.
 dry land crop, (37) 637.
 forage crop, (29) 225; (38) 665; (39) 532.
 silage crop, (29) 575; (39) 134, 231, 272; (40) 330.
 substitute for sugar, (38) 899.
 sugar-producing plant, (40) 325.
 biennial cropping, (38) 430.
 Black Amber, seeding experiments, (40) 522.
Sorghum—Continued.
 breeding—
 experiments, (35) 32.
 experiments, technique, (40) 241.
 for drought resistance, (34) 528.
 cultivated, prototype, (33) 531.
 culture, (27) 32; (31) 35; (32) 132, 226; (34) 630, 694; (35) 33.
 culture—
 experiments, (26) 436, 830; (27) 136, 529; (28) 136, 633; (29) 225; (30) 434, 824; (31) 733, 829; (32) 132, 526; (33) 31, 32, 33, 333; (34) 227, 630; (35) 529; (36) 133, 332, 735, 830; (37) 227, 329, 436, 529, 635; (38) 133, 334, 341, 632, 829, 830; (39) 437, 835; (40) 230.
 for chicken feed, (38) 827.
 in California, (37) 338.
 cotton belt, (32) 533.
 eastern Oregon, (38) 432.
 Guam, (32) 731.
 Kansas, (39) 33; (40) 331.
 Montana, (33) 526.
 New Mexico, (40) 18.
 Philippines, (26) 361.
 sand hills of Nebraska, (35) 827.
 Tucumán, (37) 134.
 Washington, (40) 730.
 under dry farming, (36) 528, 529; (37) 329.
 value, and uses, (28) 137.
 depth of sowing tests, (27) 835.
 digestibility, (38) 778.
 diseases in West Indies, (37) 452.
 downy mildew, studies, (31) 51.
 Early Amber, as a dry land crop, (29) 736.
 Early Amber, yields, (39) 336.
 effect on following crop, (35) 827.
 exhibits, preparation, (31) 495.
 feeding value, (39) 538; (40) 875.
 fertilizer experiments, (26) 232, 631, 830; (27) 336; (30) 820; (31) 421, 733, 829; (35) 323; (37) 436; (38) 829.
 fodder, digestibility, (31) 863.
 fodder, mineral constituents, digestibility, (40) 769.
 for forage, (33) 226.
 for sirup production, (40) 434.
 forage experiments, (26) 632.
 formation of sugar in, (28) 225; (29) 409.
 Freed, culture experiments, (40) 331.
 Fusarium disease, studies, (36) 348.
 grain—
 analyses, (37) 539.
 and forage, irrigation experiments, (40) 330.
 as forage and silage crop, (31) 829.
 as human food, (36) 661; (39) 538, 870.
 bread from, (37) 539; (40) 66.
 breeding experiments, (40) 624.
 chemistry of, (40) 608.
 classification, (39) 838.
 composition and feeding value, (35) 372.
 composition and uses, (33) 835.
 culture and use, (32) 335.
 grain, culture—
 experiments, (27) 532; (30) 136; (34) 229.
 in Guam, (40) 327.
 in Texas, (27) 36; (29) 429; (35) 440; (39) 537, 838.
 in Utah, (38) 230.
 under dry-land conditions, (31) 429.
 under irrigation, (34) 229.
 grain—
 digestibility, (36) 660.
 drought resistance of, (28) 633.
 fats and fatty acids of, (38) 410.
 food value, (31) 357.
 improvement, (40) 737.
 notes, (31) 333.
 seed selection, (38) 237.
 starches of, (35) 108, 616.
 storage, (39) 538.
 treatise, (31) 834.
 varieties, (32) 226, 332, 334.
 variety tests, (40) 433.
 green manuring experiments, (39) 31.
 hay, chloroform extract of, (31) 71.
 hay, composition, (27) 668.
 hay, digestibility, (27) 669; (31) 863; (37) 168, 865.
 hay, production in Nebraska, (35) 438.
 head smut, studies, (31) 747.

Sorghum—Continued.

- hydrocyanic acid in, (27) 77; (30) 30, 584; (33) 234; (35) 340; (37) 109, 113.
- improvement, (26) 737; (28) 736.
- inheritance of stem characters, (37) 234.
- insects affecting, (28) 555.
- irrigation experiments, (27) 529; (30) 34; (35) 286.
- juice, defecation for sirup manufacture, (37) 511.
- kernel smut, covered, (39) 756.
- kernel smut, studies, (34) 444; (38) 645.
- leaves—
 - free hydrocyanic acid in, (27) 635.
 - variation of water and dry matter in, (37) 637.
- maturity in relation to composition, (40) 330.
- midge affecting Sudan grass, (33) 746.
- midge in Argentina, (35) 155.
- midge, notes, (27) 36; (29) 252.
- moisture content and shrinkage, (34) 828.
- nonsaccharine, culture in Philippines, (40) 231.
- notes, (26) 362; (29) 395.
- on acid manganese soil, (39) 627.
- orange, hydrocyanic acid in, (33) 234.
- pigeon pea mixtures, tests, (26) 631.
- plumoseum, analyses, (30) 565.
- root system, (36) 827.
- root systems and leaf areas, (35) 437.
- rust, notes, (36) 541.
- saccharatum, analyses, (27) 469.
- seeding experiments, (37) 330, 331, 339; (38) 32, 630; (40) 227.
- seeds, formation of hydrocyanic acid in, (27) 132.
- selection experiments, (37) 32; (38) 433.
- silage—
 - acetylmethylcarbinol in, (40) 412.
 - analyses, (27) 469.
 - digestibility, (31) 863; (37) 865.
 - feeding value, (39) 71; (40) 666.
 - for cows, (37) 683.
 - forage poisoning due to, (36) 581.
- sirup—
 - analyses, (30) 665.
 - evaporators, (39) 808.
 - from Arizona cane, analyses, (39) 769.
 - manufacture, (26) 512; (39) 315, 510.
 - notes, (37) 715.
- smut—
 - life history, (28) 445.
 - notes, (32) 240; (35) 348.
 - treatment, (28) 445; (38) 351; (39) 248.
- stalks, feeding value, (38) 168.
- sugar content as affected by castration, (31) 44.
- sugar content, studies, (40) 325.
- sweet—
 - as dry-farm crop, (39) 736.
 - forage crop, (39) 236.
 - hay crop, (39) 129.
 - silage crop, (38) 174, 630; (39) 33, 71, 129.
 - covered kernel smut on, (39) 756.
 - critical period of growing season, (39) 811.
 - feeding value of seed, (39) 71.
 - of India, analyses, (32) 136.
 - seeding rates, (40) 729.
- textbook, (30) 635.
- toxicity, (27) 78.
- transpiration in, (34) 522; (36) 226.
- triple-seeded spikelets in, (36) 532.
- uses of grain, (39) 538.
- v. corn for forage, (35) 529.
- varieties, (26) 233, 631; (27) 32, 337, 736; (28) 533, 735, 827; (29) 426, 535, 631; (30) 828; (31) 36, 133, 733, 829; (32) 729; (34) 227; (35) 337, 526, 528, 832; (36) 33, 131, 133, 830; (37) 32, 132, 329, 331, 435, 436; (38) 32, 334, 341, 431, 433, 630, 828, 829, 830, 831; (40) 331, 823.
- variety, new, notes, (29) 141.
- variety tests, (39) 33, 129, 433, 434, 835, 838; (40) 32, 230, 624.
- vulgar—
 - and *S. halepense*, description and culture, (35) 640.
 - cyanogenesis in, (40) 804.
 - formation of cyanogen in, (28) 527.
 - notes, (27) 32.
- water requirement, (29) 826; (32) 127, 226, 335; (35) 529, 823; (38) 229.
- yields, (29) 32.

Sorgo and corn, transpiration, (39) 440.

Sorindeia oleosa fruit, studies, (28) 360.

Sorodiscus callitrichis, tissue invasion by, (40) 50.

Sorolpidium betae, notes, (28) 346.

Sorosphaera—

- graminis, life history and cytology, (26) 52.
- veronica, tissue invasion by, (40) 50.

Sorospora uella (agrotidis), studies, (36) 757.

Sorosporium—

- panici, description, (30) 351.
- reilianum, notes, (35) 45.
- reilianum, studies, (31) 747.
- simii, n.sp., description, (36) 450.

Sorel—

- catalytic fertilizers for, (27) 629.
- disease, notes, (38) 350.
- dissemination by farm animals, (26) 839.
- growth in alkaline media, (40) 40.
- growth in relation to soil acidity, (35) 529.
- red, description and eradication, (34) 736; (37) 239.

Sotol as feeding stuff, (40) 277.

Sotol, notes, (29) 441.

Souma, transmission by blood-sucking insects, (26) 150.

Sound—

- rays, path in air, (36) 719.
- waves, abnormal propagation, (36) 19.

Soup cubes, composition, (31) 656.

Soups—

- canned, inspection, (27) 565.
- condensed, examination, (26) 660; (31) 658.
- osmotic pressure, (28) 262.

Sour grass, culture experiments, (31) 524.

Soursop—

- as a stock for cherimoya and atemoya, (32) 143.
- propagation, (27) 537.

South Carolina—

Boll Weevil Commission, report, (37) 359.

Station—

- financial statement, (26) 692; (28) 599.
- notes, (26) 397, 495, 696; (27) 199, 800; (29) 98, 399; (30) 398, 600; (31) 198, 497; (32) 600; (34) 199, 497; (36) 197, 296, 599, 696, 899; (37) 300, 499, 600; (38) 98, 800.
- report, (30) 599; (32) 598; (34) 694; (36) 693; (38) 698; (40) 694.
- report of director, (26) 692; (28) 599.

South Dakota—

- College, notes, (26) 696; (27) 300, 398; (29) 700; (30) 198; (31) 300; (34) 97; (36) 797; (38) 98, 400, 600; (39) 97, 198; (40) 99, 499.

Station—

- financial statement, (26) 692.
- notes, (26) 696; (27) 300, 398; (28) 495; (29) 700; (30) 398; (32) 199; (34) 97; (36) 797; (37) 99; (38) 400, 600; (39) 97, 198; (40) 499.
- report, (30) 697; (33) 398, 599; (34) 197; (37) 195; (39) 398.
- report of director, (26) 692.

South Oesterbotten Moor Experiment Station, report, (27) 723.

Southern—

- Educational Association, (26) 200.
- Forestry Congress, proceedings, (37) 450.
- States Conference on Secondary Agricultural Education, (34) 799.

Sow thistle—

- eradication, (31) 739; (39) 744.
- geographical distribution, (26) 335.

Sowbugs as blister rust carriers, (39) 248.

Sows—see also Pigs and Swine.

- black pigment in mammary area, (35) 376.
- breeding during lactation, (39) 274.

brood—

- alfalfa hay for, (40) 75.
- body length and fertility in, (36) 371.
- care and management, (30) 871.
- feed requirements of, (26) 769.
- goitrous condition, (39) 187; (40) 185.
- mineral requirements, (40) 372.
- cost of wintering, (39) 175.
- effect of feed on offspring, (27) 279.
- feeding, (28) 575.
- gestation period in, (28) 466.
- milk, composition, (40) 775.
- ovariotomy in, (27) 875; (30) 673; (31) 870; (33) 871; (35) 376.
- pregnant, iodine requirement, (37) 278.
- wintering, (39) 73.
- wintering, colony-house system, (34) 173.

Soy bean—

- bacteria as affected by acidity, (39) 722.
- bacterial blight, studies, (37) 842.
- bacterial disease, studies, (38) 451.
- bacterial leaf spot, notes, (36) 47.
- cake—
 - analyses, (26) 266, 767, 809; (27) 872; (29) 270, 467; (30) 268, 467; (36) 65; (38) 771.
 - composition, (29) 712.
 - effect on milk and butter, (28) 372; (34) 570.
 - feeding value, (38) 771.
 - fertilizing value, (26) 42.
 - for cattle, (26) 468, 476; (29) 577.
 - nutritive value, (28) 673.
 - sugar content, (37) 208.
 - v. cotton-seed cake for cows, (29) 172.
- casein, manufacture, (40) 415.
- cheese, analyses, (28) 166.
- chop, analyses, (31) 864.
- diseases, studies, (33) 547.
- dishes, preparation, (26) 68.
- flour, analyses, (39) 769, 870.
- flour and condensed milk for infants, (27) 664.
- flour, use, (34) 859.
- food products, preparation, (32) 560.
- forage, composition, (33) 71; (35) 532.
- Fusarium blight or wilt disease, (37) 50.
- hay—
 - analyses, (35) 562; (38) 376.
 - ash analyses, (29) 861.
 - digestibility, (39) 171.
 - toxic effect on young animals, (36) 79.
- leaf spot, notes, (35) 247.
- meal—
 - ammonification in soils, (33) 808.
 - analyses, (26) 267, 363, 809; (27) 570; (30) 268; (31) 467; (33) 870; (34) 263; (38) 572.
 - analysis, methods, (34) 311.
 - availability of nitrogen in, (26) 124; (27) 723.
 - effect on activity of soil fungi, (36) 215.
 - feeding value, (39) 374, 376, 575, 784.
 - for chicks, (37) 682.
 - for pigs, (27) 874; (29) 371; (38) 474.
 - toxicity, (36) 580.
 - v. cottonseed meal for cows, (32) 573.
- milk, analyses, (39) 769.
- milk, manufacture, (33) 660; (36) 262.
- oil—
 - analyses, (28) 493.
 - as substitute for coconut oil and cacao butter, (30) 614.
 - chemistry of, (36) 206.
 - composition, (26) 414; (27) 611.
 - detection, (28) 412; (29) 613; (30) 413, 617.
 - examination, (26) 414.
 - extraction, (36) 532.
 - hydrogenated, properties, (34) 9.
 - industry, statistics, (39) 9.
 - oxidation and polymerization, (34) 407.
 - physical constants, (35) 312.
 - production and consumption in United States, (40) 614.
 - properties, (26) 24.
 - refractive index, (27) 614.
 - specific heat, (40) 68.
 - studies, (29) 712.
 - use in manufacture of paint, (28) 114.
- phasin, agglutinating properties, (31) 774.
- products, notes, (26) 809.
- products, utilization, (26) 613.
- protein, nutritional value, (40) 463.
- protein, utilization, (26) 564.
- stem borer, notes, (36) 157.
- urease, preserving, (40) 805.

Soy beans—

- amino acid in, (33) 665.
- analyses, (27) 235, 237, 775; (28) 138, 469; (29) 367; (30) 340; (31) 529; (32) 633; (33) 71; (34) 37, 141, 311; (35) 663; (36) 337.
- anatomical structure, (28) 660.
- and alfalfa hay for milk production, (32) 265.
- condensed milk for infants, (35) 556.
- corn as silage crop, (40) 135.
- corn for silage, seeding experiments, (40) 135.
- cowpeas, comparative yields, (40) 330.
- antineuritic value as affected by heat and alkalis, (40) 565.
- applying fertilizing solutions to aerial portions, (30) 129.

Soy beans—Continued.

- as affected by—
 - ammonium sulphate, (40) 30.
 - barium and strontium, (40) 819.
 - calcium and magnesium, (35) 726.
 - lithium salts, (28) 526.
 - magnesia, (40) 726.
 - pod position, (34) 134.
 - sulphur, (38) 221.
- as animal food, (37) 236.
- cause of scurvy, (39) 771.
- cover crop, (32) 332.
- farm crop, (26) 434.
- forage crop, (37) 640; (39) 532.
- grazing crop for pigs, (37) 679.
- green feed for chickens, (32) 570.
- green manure, (35) 337; (37) 320, 425; (39) 326, 725.
- hog pasture, (39) 373, 375, 474.
- human food, (27) 765; (31) 66; (35) 663; (37) 164, 236; (38) 197, 741; (39) 267, 366, 769, 870, 871; (40) 66, 557, 762.
- preparatory crop for tobacco, (30) 341.
- silage crop, (27) 140.
- ash analyses, (29) 861.
- botanical history, (34) 336.
- breeding experiments, (33) 331.
- carbohydrates and enzymes of, (34) 311.
- commercial products from, (32) 854.
- composition, (26) 24.
- composition and characteristics, (26) 68.
- composition and food value, (32) 64.
- cost of production, (32) 527; (33) 293; (34) 137.
- creatinin content, (33) 725.
- culture, (26) 24, 830; (27) 32, 140, 237; (28) 137; (30) 335; (31) 265; (32) 132, 431; (33) 235, 731; (34) 630; (35) 35; (37) 235; (38) 34, 35, 231, 434.
- culture—
 - and use, (27) 237; (29) 142, 536; (31) 333, 832; (32) 633; (33) 438; (35) 33; (37) 442.
 - climatic control, (38) 415.
 - experiments, (26) 422, 830; (27) 31, 235, 336, 430, 638, 735; (28) 633, 734, 735; (29) 32, 432; (30) 632; (31) 37, 133; (32) 227, 132; (33) 31, 225, 229; (34) 227, 228; (35) 826; (36) 819; (37) 227, 235, 529, 729; (38) 229, 336, 632, 827; (39) 127, 217.
 - for seed, (36) 828.
 - in Alabama, (40) 828, 829.
 - Antigua, (36) 735.
 - Bengal, (30) 438.
 - Cambodia, (30) 438.
 - cotton belt, (32) 533; (39) 138.
 - Dutch East Indies, (30) 697.
 - German East Africa, (27) 419.
 - Illinois, (37) 438.
 - Mississippi, (34) 37; (39) 231.
 - Montana, (33) 526.
 - North Carolina, (31) 132.
 - Pennsylvania, (38) 741.
 - Philippines, (26) 361; (40) 632.
 - Porto Rico, (29) 631.
 - Texas, (40) 729.
 - Washington, (40) 730.
 - on Ozark uplands, (38) 217.
 - under dry farming, (30) 435.
- decomposition in soil, (40) 214.
- description, (36) 828.
- distribution of nitrogen in, (36) 269.
- economic value, (26) 24.
- effect on—
 - companion crop of corn, (38) 338.
 - nitrate content of soils, (29) 818.
 - soil moisture, (38) 418.
 - soil nitrogen, (26) 196; (31) 733.
 - succeeding crop, (37) 235; (40) 125, 829.
- elongation of hypocotyl, (28) 739.
- feeding value, (34) 37, 867.
- fertilizer experiments, (26) 32, 422, 631, 830; (27) 638; (28) 138, 721; (29) 137, 830; (30) 34, 820; (31) 133, 430; (34) 132, 294; (35) 220, 724; (38) 217, 218; (39) 127, 217, 421, 531, 728; (40) 439, 828.
- fertilizing value, (32) 629; (35) 125.
- field tests in Fiji, (40) 231.
- formation of oil in, (32) 427.
- frost resistance in, (30) 438.
- germination as affected by green manures, (33) 331.

Soy beans—Continued.

growing—

- in sand media, (36) 297; (39) 28.
- with corn, (39) 336; (40) 135, 627.
- with cowpeas, (40) 829.
- with grain, (39) 741; (40) 822.

growth—

- and nitrogen-fixing power on acid soils, (36) 514.
- as affected by sulphur, (32) 724.
- in relation to climate, (29) 616; (33) 116; (36) 809; (38) 318, 627.
- in various salts, (36) 31.
- on calcareous soils, (31) 816.

harvesting, (37) 895.

histology, (30) 363.

hogging down, (35) 672.

illustrated lecture, (40) 599.

immature seeds, oil content, (40) 439.

inheritance in, (39) 331.

inoculation, (33) 531; (36) 527; (40) 215, 328, 439.

inoculation experiments, (33) 229; (36) 835; (38) 34.

insects affecting, (27) 155.

irrigation, (29) 621.

liming experiments, (36) 229; (39) 221, 236, 325, 421, 729, 741; (40) 126, 439.

lipase of, (34) 111.

Manchurian, analyses, (39) 107.

manual, (27) 435.

microscopical anatomy, (32) 112.

nitrogen assimilation by, (33) 426.

nitrogen content, factors affecting, (39) 236, 741.

nodule bacteria of, (32) 33, 327, 727; (36) 848; (38) 451; (39) 338.

notes, (26) 235, 362, 438; (28) 194; (29) 865; (30) 339.

nutritive value, (27) 765; (30) 760; (39) 164, 667.

on acid soil, (39) 326.

on inoculated soil, (39) 519.

pasture for pigs, (33) 762.

pedigreed, in Wisconsin, (40) 624.

phosphate injury, (39) 727, 827.

phytosterol content, (26) 607.

production and use, (39) 237, 442, 640, 741.

protein content, factors affecting, (34) 140, 632; (36) 232; (39) 236, 741.

radium fertilizer for, (32) 821.

raffinase content, (40) 171.

rotation experiments, (33) 828; (36) 829.

seed—

color variation in, (37) 334.

harvesting, (38) 237.

weight in relation to pod type, (38) 535.

seeding experiments, (37) 439; (40) 828.

selection and breeding, (31) 829.

selection experiments, (37) 636; (38) 237; (40) 623.

shrinkage tests, (38) 840.

silage from, (39) 272.

soap from, (30) 614.

softening effect on pork fat, (37) 680.

strains for rainy and dry seasons, (40) 632.

sucrose content, (28) 166.

urease of, (32) 803; (35) 10, 109, 110.

ureolytic action, (36) 503.

use in infant feeding, (34) 859.

uses, (30) 760; (36) 336, 532.

varieties, (26) 631, 828, 830; (27) 32, 235, 237, 335, 337, 638; (28) 138; (29) 31, 137, 432; (30) 434, 525, 828, 834; (31) 37, 133, 226, 333, 430, 829; (32) 226, 527, 633, 827, 830; (33) 33, 229, 235, 430, 828; (34) 228, 632; (35) 35, 337, 532; (36) 233, 828, 829; (37) 234, 235, 332, 439, 442, 636; (38) 34, 35, 229, 334, 431, 632; (39) 337.

varieties for silage, (40) 134.

variety tests, (39) 127, 129, 336, 434, 737, 738, 799; (40) 733, 828.

water requirement, (32) 127.

yields, (31) 226; (34) 228.

Soy sauce—

Japanese, brewing, (30) 828.

notes, (26) 809.

Spaerophoria sulphuripes, notes, (28) 250.

Spaghetti as a medium for growth of typhoid fever bacillus, (34) 69.

Spalangia—

muscae, notes, (29) 257.

muscidarum n.sp., description, (29) 359.

muscidarum, studies, (30) 255, 856.

Spalangia—Continued.

philippinensis n.sp., description, (38) 557.

spp., parasitic on fruit flies, (31) 456.

Spanioneura fonscolombii, notes, (35) 54.

Sparassis radicata n.sp., description, (38) 253.

Sparganthis—

albicaudana n.sp., description, (33) 748.

(Oenophthira) pilleriana, notes, (34) 63.

Sparganium railletii—

in pigs, (35) 79.

n.sp., description, (28) 886.

Sparrows—

American tree, correct name, (40) 161.

coccidiosis in, (26) 187.

control, (39) 654, 862.

destructive to codling moth, (27) 559.

destructive to grain aphids, (29) 452.

dissemination of Virginia creeper by, (34) 629

English—

destructive to alfalfa weevil, (31) 655.

destructive to locusts, (28) 351.

destructive to periodical cicada, (28) 157.

dissemination of mites by, (26) 246.

egg-laying cycles, (37) 869.

food of, (33) 553; (38) 457.

notes, (27) 254.

house, feeding habits, (28) 450.

new seaside, description, (40) 547.

relation to blackhead in turkeys, (37) 384.

trematode in, (39) 760.

Spartina—

for coast erosion control, (40) 530.

glabra, analyses, (29) 270.

Spartium junceum—

carotinoid content, (31) 803.

seed, chemistry of, (37) 710.

Spavin—

pathology of, (40) 778.

studies, (39) 590, 686.

Spear grass—

analyses, (28) 463.

for cattle, (28) 770.

giant, microscopy of pulp, (27) 315.

Spear-mint—

culture, (34) 151; (38) 246.

oil as affected by harvest, drying, and freezing, (38) 807.

oil, investigation, (26) 713.

Species—

individuality of proteins, (26) 876.

origin of, (26) 728; (27) 467; (28) 667; (30) 224; (31) 35, 823.

origin of, treatise, (30) 432.

relationships, (36) 221.

Spectrophotometry—

of the blood, (29) 408.

use in analysis, (31) 502.

Spectroscope, use in acidimetric titrations, (39) 503.

Speeds, calculating, (29) 389.

Spegazzinia ornata, notes, (29) 647.

Speisefett, notes, (29) 564.

Spelt—

and wheat, hybridization, (38) 636; (40) 524.

as a forage crop, (38) 827.

bacterial blight, notes, (35) 845.

bran, analyses, (26) 266.

classification studies, (31) 327.

culture—

and variety tests, (40) 333.

at Belle Fourche, (40) 332.

experiments, (27) 638; (32) 526; (34) 138; (36) 32, 34; (37) 330; (38) 634; (39) 435, 735.

in Oregon, (39) 228.

southern Idaho, (36) 227.

Texas Panhandle, (29) 429; (35) 440.

Wyoming, (38) 527.

fall-sown, in Maryland and vicinity, (36) 736.

fertilizer experiments, (27) 638.

milling and baking tests, (40) 234.

milling tests, (26) 462.

seeding experiments, (40) 334.

series of wheat varieties, (40) 636.

varieties, (27) 32, 137, 334, 638, 736; (29) 222; (32) 431; (33) 34; (34) 733; (35) 229; (36) 32; (37) 332, 530; (38) 634; (39) 436, 437.

yields, (28) 533.

Sphenophorus callosus, notes, (33) 746.

Speotyto cunicularia hypogaea, destruction of locusts by, (28) 351.

- Spergula arvensis*—
analyses, (31) 863.
as coffee substitute, (40) 508.
eradication, (31) 532.
seed oil, notes, (36) 803.
- Sperm**—
cells of fowls, vitality and activity of, (31) 474.
iso-agglutinins, production by ova, (29) 167.
oil, chemistry of, (35) 784.
oil, hydrogenated, properties of, (34) 9.
- Spermatogenesis**—
in hybrids, studies, (27) 371.
in rabbits, (35) 167.
- Spermatogonia**, origin in male chick, (38) 173.
- Spermatoxin**, effect on female organism and ovum, (26) 877; (29) 167.
- Spermatozoa**—
development outside the egg, (26) 877.
duration after fecundation in pullets and ducks, (34) 864.
morphological constituents, (30) 201.
transportation, (29) 66.
- Spermatozoids**, effect on the blastula, (29) 66.
- Spermophagus**—
piurae n.sp., description, (32) 658.
subsciatulus, remedies, (40) 553.
- Spermophiles**, prevalence in Colorado, (28) 652; (30) 249.
- Spermophilus citillus**, notes, (28) 180.
- Spbacella**—
scirpicola, notes, (29) 345.
sorghi, notes, (38) 848.
- Spbaceloma ampelinum**—
in America, (36) 545.
treatment, (28) 649.
- Spbacelotheca**—
cruenta and *S. sorghi*, confusion, (34) 444.
relliana on corn in Barbados, (33) 445.
sorghi, inoculation experiments, (37) 749.
sorghi, notes, (29) 547; (32) 146, 240; (35) 44; (37) 452.
sorghi, studies, (38) 645; (39) 756.
spp., notes, (27) 545.
- Sphaenoptera gemellata**, notes, (27) 863.
- Sphaeralcea lindheimeri**, food plant of cotton boll weevil, (31) 458.
- Sphaerella**—
caricae n.sp., studies, (29) 849.
coffeicola, notes, (38) 51.
convexula, notes, (26) 56.
fragariae, treatment, (37) 246.
heveae n.sp., notes, (39) 452.
macularis, notes, (29) 51.
maculiformis, studies, (28) 240.
morica, notes, (27) 547.
nigerristigma n.sp., description, (32) 844.
opuntiae, studies, (27) 352.
relation to *Ascochyta*, (28) 849.
rubina, notes, (26) 646.
rubina, studies, (33) 649.
sacchari, notes, (40) 157.
sp. on *chayote*, (37) 755.
spp., notes, (28) 845; (29) 345.
tabifica, notes, (26) 446.
tremulicola, notes, (29) 51.
- Sphaeronema**—
fimbriatum—
distribution and prevalence, (33) 743.
notes, (30) 150; (32) 343.
studies, (34) 156; (39) 854; (40) 347.
treatment, (28) 849.
oreophillum n.sp., notes, (37) 630.
parasiticum n.sp., description, (30) 746.
sp. affecting sugar cane, (31) 539.
- Sphaeronemella**—
fragariae n.sp., description, (36) 452.
sp. on strawberries, (33) 744.
- Sphaerophoria cylindrica**, notes, (36) 460.
- Sphaeropsidales**, light and pycnidia formation, (38) 225.
- Sphaeropsis**—
ellisi, notes, (30) 751.
maculans, notes, (37) 748.
malorum—
as affected by cold, (34) 538.
ascogenous form of, (30) 651.
biological strains of, (31) 445.
description, (29) 752; (30) 50, 650.
dissemination by tree crickets, (35) 548.
effect on composition of apples, (36) 148.
- Sphaeropsis**—Continued.
malorum—continued.
life history, (31) 446.
notes, (27) 651; (28) 548; (29) 49, 748, 752; (31) 450; (34) 54, 247, 644; (35) 351; (39) 850.
relation to apple collar rot, (34) 157.
relation to apple rot, (33) 348.
studies, (32) 750; (35) 151.
summary of information, (40) 251.
temperature relations, (36) 649.
transmission by tree crickets, (34) 653.
treatment, (29) 49, 752; (30) 650.
necatrix, studies, (39) 859.
pseudodiplodia, notes, (27) 747; (37) 553.
sp. on peaches, (33) 248.
sp. on strawberries, (33) 744.
spp. relation to citrus gummosis, (29) 247.
spp., studies, (28) 240.
tumefaciens on limes, (34) 349.
tumefaciens, studies, (27) 652.
- Sphaeropyx bicolor**, notes, (31) 355.
- Sphaerostilbe**—
coccophila, description, (33) 459.
coccophila, notes, (27) 358, 860; (28) 196, 453; (29) 852; (30) 455.
flavida, notes, (39) 849.
parasitic on scale insects, (30) 746.
repens, in Malaya, (38) 52.
repens, notes, (28) 241; (34) 57; (35) 251; (37) 349; (40) 53.
repens on rubber, (33) 449.
sp., notes, (26) 245; (28) 149; (31) 55.
sp. on citrus, (37) 452; (40) 155.
sp. on tea roots, (40) 48.
- Sphaerotheca**—
humuli—
notes, (29) 547.
resistance to fungicides, (38) 450.
studies, (29) 346; (39) 147.
- mors-uvae**—
in Italy, (33) 447.
life history, (32) 547.
notes, (26) 344; (27) 750; (28) 448, 650; (30) 349, 845; (31) 545, 749; (33) 647, 846; (35) 650; (37) 550.
on currants, (34) 648.
studies, (33) 347.
treatment, (26) 345; (28) 349, 650; (29) 249; (30) 750; (31) 841, 843; (34) 843; (36) 751.
- pannosa**—
control, (40) 751.
notes, (27) 850; (30) 537; (32) 749; (37) 453, 839.
on raspberry, (34) 749.
studies, (33) 347, 447, 854.
treatment, (34) 442, 750.
vars., inoculation experiments, (33) 647.
spp., notes, (26) 450; (40) 53.
- Sphaerulina**—
aucubae n.sp., description, (27) 149.
suchumica n.sp., description, (35) 454.
taxi, notes, (26) 852.
- Spagnum**—
bogs, forest growth in, (37) 837.
moss, digestibility, (30) 568.
moss, temperature conditions in, (34) 715.
moss, use in preparation of bandages, (37) 736.
peat, fertilizing value, (31) 826.
peat, investigations, (28) 518.
relation to formation of upland moors, (29) 124.
turf, digestibility, (35) 474.
turf, humus acids of, (27) 322.
- Sphecoidea** of Nebraska, (40) 553.
- Sphenophorus**—
callosus, see Corn billbug.
discolor injurious to small grain, (30) 161.
maidis, life history, (35) 760.
nebulosus, notes, (33) 256.
obscurus on sugar cane, (40) 57.
parvulus, notes, (26) 863; (29) 52, 252.
phoeniciensis, notes, (35) 657.
sculptilis, notes, (33) 58.
sericeus, notes, (28) 752; (30) 356.
sordidus, see *Cosmopolites sordidus*.
sp., notes, (26) 354, 857.
spp., control, (40) 655.
spp., studies, (29) 56.
venatus, notes, (26) 862.

- Sphenoptera**—
lineata geminata, notes, (26) 147.
lineata geminata, paper on, (27) 656.
neglecta, notes, (27) 63.
- Sphenoporea berveridis** n.sp., from the Andes, (40) 133.
- Sphenostylis stenocarpa**—
 agglutinating properties of seeds, (31) 774.
 analyses and digestibility, (28) 464.
- Spheg** spp., bionomics, (35) 468.
- Sphingidae**—
 key, (26) 860.
 phylogeny, (32) 850.
- Sphinx**, white-lined morning, notes, (28) 654.
- Sphyrapicus** spp., relation to trees and wood products, (26) 58.
- Spicaria**—
bassiana, notes, (27) 56.
colorans, notes, (29) 547.
colorans, studies, (27) 751; (33) 549.
farinosa, notes, (28) 559.
solani, notes, (34) 443.
verticilloides n.sp., notes, (27) 56.
verticilloides, notes, (28) 559.
- Spices**—
 adulteration, (32) 161.
 culture experiments, (38) 845.
 culture in Dutch East Indies, (30) 697; (34) 345.
 culture in Philippines, (34) 635.
 effect on hippuric acid excretion, (28) 261.
 effect on microorganisms, (35) 557.
 examination, (26) 110, 867; (40) 115, 204, 205.
 germicidal effect, (36) 863.
 Gloeosporium disease of, (31) 844.
 handbook, (27) 242; (34) 166.
 methods of analysis, (32) 109.
 preservative value, (38) 469.
 purin content, (40) 205.
 use as preservatives, (26) 157.
 value in the diet, (29) 664.
- Spider mite**, *see* Red spider.
- Spiders**—
 habits, (35) 356.
 hibernating in Spanish moss, (28) 654.
 injurious to bees, (31) 159.
 manual, (28) 257.
 natural enemies of, (29) 262.
 silk of, (31) 452.
 summary of information, (39) 768.
 toxins of, (37) 461.
 transcanadian, (40) 648.
- Spiderwort**, notes, (29) 441.
- Spillochaetosoma californica** n.g. and n.sp., description, (40) 653.
- Spilocryptus polychrosidis** n.sp., description, (38) 565.
- Spinach**—
 Algerian, culture experiments, (30) 632.
 aphid, relation to blight, (39) 551.
 as affected by radioactive substances, (32) 34.
 ash absorption from concentrated soil solutions, (40) 502.
 blight, studies, (39) 550; (40) 450, 648.
 canned, tin content, (28) 564.
 carrion beetle, studies, (37) 261.
 culture, (26) 393, 539; (40) 833.
 culture experiments, (32) 635; (33) 43.
 disease, new, description, (26) 55.
 disease, notes, (30) 847.
 fertilizer experiments, (28) 735; (32) 540; (34) 532.
 finger-and-toe disease of, (31) 149.
 flea beetle, notes, (29) 456, 761.
 fungus disease of, (32) 147.
 growth in partially sterilized soils, (26) 815.
 insects affecting, (29) 556.
 losses in cooking, (28) 460.
 maggot, notes, (28) 752.
 mildew, treatment, (28) 446.
 mulching v. clean culture, (33) 534.
 physiological studies, (40) 450.
 purin content, (40) 205.
 rust, investigations, (26) 548.
 seeds, large v. small, (31) 634.
 value in the diet, (39) 872, 876.
 varieties, (32) 635; (33) 43.
 vitamin content, (40) 564.
- Spintherus pulchripennis** n.sp., description, (30) 59.
- Spinus pinus**, destruction of grain aphids by, (29) 452.
- Spiraea**—
ulmaria, notes, (27) 829.
vanhouttei, abnormal inflorescence, (39) 30.
- Spiranthes autumnalis**, tuberization and root infestation, (30) 29.
- Spiraea**—
 culture in Alaska, (29) 743.
 leaf roller, notes, (39) 361.
- Spirillaceae**, genera, (39) 828.
- Spirillosis**—
 equine, in Morocco, (36) 483.
 in fowls, (31) 284; (36) 782.
- Spirillum**—
 minor, relation to *Spirochaeta morsus-muris*, (40) 781.
 rubrum, studies, (33) 178.
 tyrogenum, studies, (33) 178.
- Spirits**, bibliography, (31) 339.
- Spirobolus marginatus**, life history, (34) 364.
- Spirochaeta**—
anserina, longevity in fowl tick, (31) 586.
anserina, relation to spirochetosis in fowls, (26) 684.
duttoni, filterability, (31) 81.
elusa n.sp., studies, (31) 81.
equi, notes, (28) 184.
gallinarum, cultivation, (28) 282; (29) 558.
gallinarum, transmission by mites, (32) 279.
hebdomadis n.sp., studies, (40) 85.
 hyos, antigenic value in hog-cholera serum tests, (35) 784.
 hyos, inoculation experiments, (33) 879.
 hyos, relation to hog cholera, (36) 384.
icterohaemorrhagiae—
 dissemination by rats, (38) 653, 760.
 in rats, (37) 577; (39) 759.
 in United States, (39) 890.
 studies, (39) 889.
morsus muris n.sp., cause of rat-bite fever, (37) 375.
recurrens, lice as hosts, (40) 551.
regaudi n.sp., description, (26) 588.
 spp., life histories, (26) 460.
 suis, studies, (29) 682; (30) 383; (32) 378.
theileri—
 in cattle in Panama, (39) 84.
 in United States, (33) 385.
 relation to anaplasmosis, (29) 584.
- Spirochetæ**, photomicrographs of, (29) 478.
- Spirochete**—
 infection in man, notes, (27) 680.
 infection, inheritance in *Argas persicus*, (27) 84.
 of rat-bite fever, (40) 781.
- Spirochetes**—
 culture, (31) 81.
 distribution and morphology in ticks, (31) 81.
 filterability and biology, (32) 579.
 in digestive tract of swine, (37) 279.
 in hog cholera, (30) 585.
 in papillomatous neoplasma in horses, (34) 280.
 notes, (27) 181; (29) 563; (31) 81.
 of carcinomas in man and animals, (26) 581.
 studies, (27) 780; (33) 178; (39) 190.
 transmission, (30) 578.
 transmission by stable flies, (26) 150; (28) 756.
- Spirochetosis**—
 equine, bibliography, (28) 184.
 in fowls, (26) 684; (29) 588; (31) 383, 485, 586, 782.
 in fowls, treatise, (27) 385.
 in Sudanese fowls, (30) 679.
 résumé, (29) 883.
 treatment, (29) 484; (31) 284.
- Spirogyra**—
 as affected by—
 anesthetics, (26) 824.
 colloidal metals, (31) 129.
 copper sulphate, (39) 27.
 formaldehyde, (26) 731.
 various salts, (38) 27.
 cultures, nutrient solution for, (31) 32.
 inflata, variability in zygospores, (34) 370.
 maxima, tannin in, (34) 825.
 resistance to fungi, (38) 350.
- Spiroptera**—
megastoma, injurious to horses, (26) 384.
megastoma, splenic abscess due to, (37) 182.
 n.sp., affecting rats, (30) 279.
 n.sp., relation to cancer in rats, (32) 353.
reticulata in imported meat, (27) 83.
sanguinolenta, notes, (28) 759.

- Spiroptera**—Continued.
 spp., physiological investigations, (31) 679.
 strongylina, notes, (28) 285.
- Spittle insects**—
 injurious to grass, (36) 856.
 notes, (30) 655.
- Spizella**—
 monticola, correct name for tree sparrow, (40) 161.
 pusilla, coccidiosis in, (26) 187.
 spp., destruction of grain aphids by, (29) 452.
- Spleen**—
 influence in nutrition, (32) 562.
 rôle in digestion, (31) 361.
 rôle in formation of immune bodies, (26) 277.
 Splenic fever, transmission by ticks, (28) 758.
 Splenic abscess as a secondary infection in horses, (37) 182.
- Splenitis** in pigs, (33) 774.
- Splenomegaly**, primary, in sheep, (27) 186.
- Splices**—
 directions and illustrations, (27) 96.
 methods of making, (29) 390.
- Spodiopogon lacei** n.sp., description, (33) 527.
- Spodoptera mauritia**, notes, (27) 155, 656; (29) 456; (38) 257.
- Spogostylum anale**, life history, (29) 456.
- Spondias cythereae**, asexual propagation, (32) 142.
- Spondylocadum**—
 atrovirens, notes, (32) 50, 239, 443, 547, 643; (34) 443; (37) 350, 551; (38) 753.
 atrovirens, studies, (29) 347; (35) 455; (36) 544.
 maculans, n.sp., relation to rubber spotting, (29) 451.
 sp., notes, (28) 241.
- Sponge**—
 coarse, analyses, (37) 814.
 loggerhead, fertilizer from, (31) 622.
- Sponges**—
 analyses, (30) 520.
 fertilizing value, (30) 519.
- Spongospora**—
 on plant roots, (36) 146.
 scabies, notes, (30) 847; (32) 544; (33) 849.
 scabies, occurrence in Scotland, (26) 748.
 solani, notes, (31) 243; (32) 546; (34) 241.
 solani, occurrence in Maine, (29) 550.
 solani, studies, (26) 547.
 subterranea—
 description, (31) 149.
 in Oregon, (33) 850.
 life history, (33) 346.
 native habitat, (34) 645.
 notes, (27) 446; (29) 448; (31) 243, 842; (32) 239; (37) 350, 652, 753; (40) 48, 847.
 studies, (34) 443; (36) 249, 847.
- Spontaneous combustion** as a cause of fires, (37) 788.
- Spore plants**, treatise, (33) 429.
- Spores**—
 antibodies of, (36) 380.
 cnidosporian, filament extrusion, (40) 255.
 method of picking up, (31) 746.
- Sporobolus**—
 argutus, analyses, (31) 863.
 depauperatus, analyses, (29) 270.
 indicus, notes, (26) 362.
 phleoides, notes and analyses, (37) 533.
 spp., analyses, (36) 334.
 spp., analyses and digestibility, (27) 871; (32) 167.
 spp., studies, (38) 66.
- Sporodesmium**—
 fumagineum n.sp., notes, (37) 630.
 putrefaciens, description and treatment, (28) 847.
 putrefaciens, notes, (28) 649; (30) 47; (33) 851; (35) 245.
 solani varians, notes, (36) 541.
 sp., notes, (31) 539.
- Sporonema oxycocci**, treatment, (39) 749.
- Sporothrix**—
 schenckii, penetration of gastro-intestinal wall by, (36) 379.
 schenckii-beurmanni, studies, (34) 384.
- Sporotrichoses**, treatise, (31) 81.
- Sporotrichosis**—
 equine, in Montana, (37) 82.
 following mouse bite, (40) 180.
 notes, (27) 884.
 of animals, (30) 282; (32) 271.
 studies, (34) 384, 385.
- Sporotrichum**—
 globuliferum—
 affecting alfalfa weevil, (36) 58.
 investigations, (26) 454.
 notes, (28) 354; (30) 459, 547; (31) 251; (32) 448; (37) 461.
 on cacao thrips, (38) 57; (39) 158.
 on chinch-bug, (26) 348.
 poae, notes, (28) 750; (30) 542.
 sp., notes, (27) 860.
- Spotted fever**—
 immunization, (35) 881.
- Rocky Mountain**—
 control, (27) 52.
 etiology, (36) 576, 577.
 in California, (38) 484.
 in rabbits, (40) 781.
 notes, (30) 760.
 relation to tick control, (26) 63.
 serum for, (26) 378.
 studies, (27) 479, 866; (31) 160; (36) 158; (37) 560.
 therapy, (27) 578.
 tick, Rocky Mountain, *see* Dermacentor venustus.
- Spray**—
 gun for orchards, (40) 639.
 injury and its prevention, (34) 154.
 injury, paper on, (28) 48.
 nozzle—
 coarse v. mist, (28) 341.
 description, (30) 651; (35) 88; (39) 541.
 for large trees, (26) 49; (40) 154.
 new type, (26) 599.
 nozzles and hose, (39) 250.
 nozzles, tests, (29) 640.
- Spraying**—*see also special crops.*
- apparatus**—
 description, (26) 848, 893; (27) 61, 485, 792; (38) 843.
 notes, (28) 148; (29) 640; (33) 97.
 portable, for cattle, (28) 181.
 tests, (26) 893; (27) 792, 855.
 arsenical residues after, (38) 54.
 as a cause of apple bitter pit, (26) 55.
 calendar, (26) 539; (27) 845; (28) 47, 48, 492, 642, 841; (29) 42; (30) 534, 642; (31) 635; (32) 637, 834; (33) 47, 141, 538, 639; (35) 234; (36) 744; (38) 843; (39) 149, 242, 345; (40) 742.
 calendar—
 for Georgia, (33) 439.
 for grapes, (40) 342.
 for orchards, (32) 637.
 citrus trees in Florida, (39) 160.
 cooperation in, (32) 637.
 cost, (36) 55, 535.
 effect on yield of apple orchards, (26) 541.
 experiments, (27) 143; (28) 142, 148, 436; (29) 145, 262, 354, 640; (30) 344; (31) 151, 335; (37) 447; (38) 551, 640.
 experiments in Nova Scotia, (38) 156.
 experiments in Virginia, (26) 48.
 foliage-lifting apparatus for, (39) 762.
 for fungus diseases, (40) 746.
 formulas for gardens, (39) 140, 656; (40) 638.
 formulas for orchards, (39) 762.
 fruit trees, (39) 39, 140.
 handbook, (38) 40; (39) 140.
 in Nova Scotia, (36) 535.
 injuries to blooms and newly set fruit of grapes, (31) 534.
 injury to foliage, (40) 449.
 liquids, promoting adherence in, (30) 248.
 liquids, wetting power of, (35) 356.
 machine, description, (31) 439.
- machinery**—
 accessories, (29) 87, 353.
 notes, (26) 48, 539; (28) 291, 450; (29) 593; (33) 735; (35) 141.
 tests, (29) 292.
- machines**, motor power, specifications, (31) 92.
- mixtures**—
 acid, in relation to scorching, (35) 651.
 adherent, notes, (29) 554.
 composition and merits, (35) 46.
 effect on germination of grape pollen, (29) 839.
 effect on insect eggs, (32) 449.
 for stone fruits, (35) 143.
 hot, use, (35) 352, 353.

Spraying—Continued.

mixtures—continued.

- increasing adhesiveness of, (28) 154.
- notes, (32) 633; (35) 356.
- preparation, (27) 357; (32) 637; (33) 47.
- preparation and use, (31) 538, 735.
- preparation with hard soap, (39) 59.
- spreading capacity and adherence, (30) 153; (32) 243.
- toxic effect on grape pollen, (33) 539.
- notes, (28) 238; (29) 146, 436, 640; (30) 344; (31) 141, 533; (32) 743, 744, 751; (34) 436, 548; (35) 36, 94, 141, 156, 445, 838; (37) 96, 143, 453, 544, 699, 744; (38) 459, 541, 796, 855; (40) 256.
- penetration method for codling moth, (31) 439.
- penetration system, (28) 787.
- recent developments in, (39) 548.
- relation to beekeeping, (35) 662.
- relation to flowering in grapes, (33) 448.
- service in New York, Niagara Co., (39) 645.

Sprays—see also Insecticides, Fungicides, and specific kinds.

- acid and alkaline, comparison, (38) 756.
- carriers and diluents for, (38) 459.
- combination, review of investigations, (31) 848.
- copper, *see* Copper.
- double purpose, (38) 258.
- dust v. liquid, (32) 550, 836; (37) 832; (38) 42, 540, 551, 843, 844.
- dust v. liquid, for apples, (31) 449; (37) 242.
- effect on transpiration of potatoes, (31) 825.
- oil-lime-sulphur, (40) 453, 454.
- preparation, (39) 345; (40) 801, 843.
- preparation and use, (26) 539.
- repellent, effect on bees, (37) 855.
- sulphur, preparation and use, (40) 59.

Spring grass, analyses, (27) 469.

Spring of 1917, (37) 808.

Springs—

- and ground water, textbook, (29) 15.
- in California, (32) 587.
- mineral, of Alaska, (38) 690.
- radioactivity, (35) 618.
- relation to public health, (29) 512.

Springtails—

- injurious to truck crops, (32) 353.
- notes, (27) 656.

Sprocket wheel design, standardization, (36) 400.

Spruce—

- accretion in lower part of stems, (31) 538.
- aphid, notes, (27) 255; (32) 448; (33) 253.
- aphid, outbreak in England and Ireland, (29) 757.
- aphis, green, notes, (32) 57.
- as affected by origin of seed, (29) 841.
- bark, use for paper specialties, (36) 417.
- beetle—
 - Engelmann, notes, (26) 561.
 - European, life history and habits, (37) 765.
- bud moth, notes, (26) 753; (28) 554; (30) 655; (34) 752.
- bud scale, notes, (33) 253; (34) 752.
- bud scale, studies, (37) 662.
- budworm—
 - in New Brunswick, (39) 866.
 - notes, (29) 252; (32) 448.
 - studies, (29) 255.
- Canadian volume tables, (26) 443.
- Chermes, studies, (40) 262.
- cones, insects affecting, (40) 163, 164.
- diseases in southern Appalachians, (31) 646.
- Douglas, die-back disease of, (30) 751.
- effect of early thinnings on stands, (29) 240.
- Engelmann—
 - and alpine fir, management, (33) 739.
 - for telephone poles, (30) 843.
 - volume tables for, (34) 641.
- fungus disease affecting, (26) 451.
- gall aphid, notes, (26) 146; (28) 353; (37) 255.
- grinding for mechanical pulp, (29) 614.
- growing with pine and beech, (27) 542.
- growth after thinning, (38) 45.
- growth and yield in high mountains, (34) 347.
- insects affecting, (31) 155.
- leaf miners, notes, (29) 256.
- management in Saxony, (29) 342.
- natural and artificial regeneration, (31) 537.
- natural distribution of, (31) 444.
- Norway—
 - absolute form quotient, (39) 247.

Spruce—Continued.

Norway—Continued.

- drought resistance, (38) 44.
- fissures in, (29) 240.
- weevil injury, (39) 159.
- of Rocky Mountains, (34) 742.
- red, growth and management, (38) 146.
- red, reproduction, (38) 45.
- regeneration in high altitudes, (26) 443.
- reproduction, (39) 145.
- rust diseases, studies, (35) 155.
- rust, new, (39) 254.
- sawfly, notes, (38) 257.
- scale, studies, (37) 662.
- seedling habits, (37) 45.
- seedlings—
 - absorption of fertilizers by, (26) 443.
 - as affected by shade and moisture, (39) 751.
 - fertilizer experiments, (37) 44.
- seeds, germination tests, (27) 47.
- selection experiments in Austria, (38) 545.
- Sitka, rots of, (40) 349.
- stands, effect on soil physics, (26) 140.
- stands, light measurements in, (26) 745.
- sulphite pulp from, (38) 809.
- thinning experiments, (35) 241.
- timber estimating tables for, (36) 345.
- turpentine, toluol from, (39) 209.
- unit stresses for, (36) 91.
- volume and value accretion in, (29) 747.
- white, in Minnesota, (38) 146.
- wood coloring in, (27) 527.
- wood, ethereal oils of, (29) 504.
- wood, investigations, (28) 642.
- wood, production of turpentine from, (26) 413.
- yield as affected by early thinning, (31) 444.
- yield tables, (27) 348.
- Spruce, review of investigations, (36) 363.
- Spumaria alba, notes, (27) 649.
- Spurry—
 - as affected by liming, (39) 117.
 - as coffee substitute, (40) 508.
- Sputum—
 - gathering from bovines, (27) 382.
 - organisms, fragmentary, (31) 380.
 - tuberculous, bacilli in, (31) 380.
 - tuberculous, chemical properties, (29) 782.
- Squabs—
 - national standard, (30) 175.
 - raising, (33) 872; (40) 280.
 - raising and marketing, (37) 775.
- Squalls, paper on, (31) 213.
- Squash—
 - borer, notes, (39) 765.
 - borer, remedies, (37) 254.
 - capsid, notes, (29) 453.
 - disease, studies, (36) 848.
 - lady beetle, *see* Epilachna borealis.
 - leaf spot in Indiana, (39) 52.
 - mosaic, notes, (39) 853.
 - sclerotinia diseases, (40) 49.
 - seed cake, digestibility, (28) 464.
 - seeds, large v. small, (31) 634.
 - seeds, oil from, (39) 9.
 - vine borer, studies, (33) 255.
- Squashes—
 - asexual reproduction of seeds, (31) 533.
 - breeding experiments, (26) 838; (37) 240.
 - calcium content, (39) 747.
 - culture, (26) 539.
 - culture experiments, (32) 132; (37) 742.
 - effect on following crop, (38) 337; (40) 135, 623.
 - fertilizer experiments, (37) 742.
 - fruit thinning experiments, (27) 741.
- Hubbard—
 - breeding and marketing, (29) 830.
 - selection experiments, (40) 740.
- inheritance in, (27) 740; (39) 747.
- mulching v. clean culture, (33) 534.
- use by prehistoric Americans, (38) 167.
- water requirement, (32) 127.
- Squatrola squatarola cynosurae near Washington, (40) 161.
- Squeezer for cattle, description, (26) 385.
- Squirrel-tail grass—
 - geographical distribution, (26) 334.
 - in Iowa, (39) 842.
- Squirrels—
 - care and feeding, (28) 173.
 - conifers damaged by, (26) 552.

Squirrels—Continued.

- destruction of conifer seed by, (31) 154.
- eradication, (39) 860.
- flying, American, (39) 460.
- flying, new genus and races of, (34) 850.
- ground—
 - bionomics, (27) 550.
 - control, (29) 651; (38) 456; (39) 153, 460; (40) 350.
 - control in Colorado, (28) 450; (37) 558.
 - destruction, (28) 248; (32) 648; (33) 552.
 - immunity to spotted fever, (31) 160.
 - in Colorado, (28) 652; (34) 651.
 - life history and control, (35) 755.
 - new microfilaria from, (26) 653.
 - new race from Wyoming, (37) 758.
 - notes, (28) 450; (30) 249; (34) 753.
 - plague-like disease affecting, (26) 461.
 - relation to plague, (26) 245.
 - relation to Rocky Mountain spotted fever, (27) 479.
 - tuberculosis in, (26) 484.
 - host of spotted fever tick, (26) 64.
- St. Augustine grass, notes, (26) 362.
- St. John's—
 - bread, digestibility, (28) 464.
 - wort, poisoning of horses by, (32) 278.
 - wort, toxic effect on pigs, (38) 589.
- St. Paul, Minn., as an agricultural and financial center, (36) 494.
- Stable—
 - air as source of bacteria in milk, (34) 183, 473.
 - fly—
 - as affecting milk production, (40) 648.
 - distance of flight over water, (30) 159.
 - feeding habits, (33) 561.
 - geographical distribution, (30) 457.
 - larvae, parasite of, (30) 553.
 - notes, (26) 147, 781; (27) 785; (29) 159, 256, 353, 454, 457, 559, 760; (32) 555; (37) 156.
 - original habitat, (33) 256.
 - outbreak in South Africa, (30) 160.
 - parasite of, (29) 359.
 - fly, relation to—
 - anthrax, (30) 780; (31) 776.
 - anthrax and streptococci, (32) 552.
 - diseases, (29) 760.
 - filaria in horses, (34) 359.
 - leprosy, (31) 851.
 - mal de caderas, (30) 785.
 - pellagra, (29) 756.
 - plague, (33) 456.
 - plague-like disease of rodents, (34) 355.
 - poliomyelitis, (26) 654; (28) 160, 161, 560; (29) 358, 559, 560; (35) 55, 280.
 - surra, (29) 760.
 - swamp fever, (32) 754; (37) 374; (38) 788; (39) 162.
 - fly—
 - remedies, (31) 158.
 - repellents for, (38) 358.
 - role in disease transmission, (26) 150.
 - studies, (29) 559; (37) 665.
 - manure, *see* Manure.
- Stables—
 - arrangement, (32) 86.
 - construction, (27) 793.
 - descriptions, (28) 86.
 - disinfection, (26) 578; (39) 488.
 - open v. closed, for dairy animals, (30) 676.
 - use of peat in, (39) 425.
 - ventilation, (30) 691.
- Stachydrin, isolation from—
 - alfalfa hay, (37) 309; (39) 610.
 - stachys tubers and citrus leaves, (26) 107.
- Stachydidium theobromae n.sp., description, (37) 755.
- Stachyose—
 - decomposition, (26) 310.
 - in legumes, (28) 761; (31) 13.
- Stachys—
 - silvatica, betains in, (28) 312.
 - spp., betains in, (27) 204.
 - tuberifera as affected by copper fungicides, (28) 247.
 - tuberifera, isolation of stachydrin from, (26) 107.
- Stagger grass, stock poisoning by, (39) 886.
- Staggers—
 - in horses, cattle, and mules, (28) 378.
 - in sheep in Patagonia, (39) 85.
 - notes, (40) 86.

Stagonospora—

- basellae n.sp., studies, (31) 56.
- cassavae n.sp., description, (33) 647.
- convolvuli n.sp., description, (37) 748.
- Stags, breeding for horns, (33) 173.
- Staining of microfilariae, (31) 383.
- Staining of yeasts, (31) 478.
- Stains, removal from textiles, (38) 114.
- Stains, use in study of bacteria, (29) 630.
- Stalk borer—
 - notes, (26) 59; (29) 252; (33) 58; (39) 358.
 - summary of information, (39) 765.
- Stallion—
 - enrollment law in Indiana, (32) 771.
 - law in Kansas, (27) 279.
 - law in New Jersey, (27) 373.
 - law in Ontario, (30) 872.
 - law in Wisconsin, (30) 470.
 - registration law in Kansas, (28) 494; (39) 376
- Stallions—
 - advertising in Indiana, (31) 75.
 - Asben, from Sudan, (27) 674.
 - breeding, (29) 370.
 - care and management, (29) 873.
 - castration, (27) 471.
 - certification in Victoria, (27) 471.
 - cooperative purchase and use in Denmark, (20) 296.
 - distribution, (32) 171; (35) 377.
 - distribution in Wisconsin, (30) 470.
 - in Indiana, (33) 673; (37) 169; (39) 73.
 - Kansas, (29) 873; (37) 270, 868; (39) 376; (40) 472.
 - Oklahoma, (37) 169; (40) 76.
 - Utah, (37) 681; (39) 73; (40) 473.
 - Wisconsin, (34) 469; (36) 472.
 - legislation in United States, (37) 572.
 - licensed, distribution, (26) 168; (28) 269.
 - licensed in Utah, (31) 471.
 - public service, in Wisconsin, (38) 275.
 - registration, (27) 72; (32) 771.
 - registration in Canada and United States, (30) 872.
 - registration in Victoria, (27) 471.
- Standard—
 - Container Act, (38) 40.
 - packages and uniform grades, (40) 293.
- Staphylea—
 - effect of seed on size of fruit, (27) 231, 524.
 - fruit, physico-chemical constants of, (31) 427.
- Staphylinidae, catalogue, (26) 560.
- Staphylococcus—
 - albus in udder of healthy cows, (32) 872.
 - liquefaciens aurantiacus n.sp., description, (26) 581.
 - pyogenes albus, notes, (26) 880.
 - pyogenes aureus—
 - as affected by serums and leucocytes, (26) 175.
 - destruction by periodol, (39) 80.
 - lipase of, (29) 177.
 - pyogenes—
 - invading *Cryptococcus farciminosus* lesions, (40) 680.
 - occurrence in sugar, (26) 505.
 - vaccine, tests, (34) 580.
- Star apples, cold storage of, (32) 439.
- Star scale, destruction by mites, (26) 553
- Starch—
 - and diastase of plant tissues, relationship, (28) 729.
 - and skim milk for calves, (36) 370.
 - as affected by—
 - alkalis, (35) 502.
 - hydrolyzing agents, (26) 107.
 - removal of ash and solution, (35) 502.
 - saliva, (26) 872.
 - as binder for ice cream, (36) 78.
 - as substrate for enzym action, (36) 315.
 - chemical constitution, (36) 710.
 - chemistry of, (33) 713.
 - congestion during retarded plant growth, (35) 523.
 - content of cassava roots, (30) 502.
 - crude, determination in cocoa, (32) 298.
 - determination, (26) 804; (27) 497; (29) 716; (32) 109; (40) 114, 204, 312.
 - determination—
 - in bologna, (28) 807.
 - brewers' grains, (26) 807.
 - feeding stuffs, (28) 715.

Starch—Continued.

determination—continued.

- in food products, (27) 807.
- meat and fish products, (29) 798.
- meat products, (27) 499; (28) 358.
- mixtures, (30) 415.
- plants, (32) 807; (35) 206.
- potatoes, (30) 205; (32) 114; (34) 506, 713.
- rye and wheat flours, (31) 869.
- sugar products, etc., (31) 412.
- wheat, (28) 836.
- wood, (23) 202.

Lintner's polarimetric method, (28) 313.

of gelatinizing temperature, (35) 616; (37) 410.

digestibility in mixed rations, (34) 169.

digestion by young calves, (38) 874.

digestion in germinating peas, (28) 127.

distillation in vacuo, (38) 708.

distillation under reduced pressure, (40) 110.

effect on—

- ammonification, (28) 718.
- bacterial flora of soils, (28) 815.
- baking qualities of flour, (30) 556.
- geotropism in roots, (29) 322.
- infant digestion, (33) 663.
- nitrification in soils, (28) 218.
- nitrogen fixation, (28) 816.
- nutritive value of proteins, (40) 562.
- oxidation of sulphur in soils, (30) 222.
- peptic digestion, (34) 862.
- soil acidity, (37) 23.
- soil nitrogen, (35) 218.
- soil phosphates, (34) 421.
- toxicity of nitrates, (30) 227.

elaboration in *Iris germanica*, (34) 524.

energy values, (40) 365.

equivalent theory in feeding standards, (33) 870.

equivalents of feeding stuffs, (26) 467.

extraction from potatoes, (28) 208.

factory refuse—

- composition and digestibility, (27) 669.
- drying, (27) 669.
- fertilizing value, (29) 129.

factory waste waters, studies, (26) 528.

feeding during inanition, (26) 465.

ferments as affected by salts, (27) 109.

formation—

- and decomposition, (31) 128.
- in immature seeds, (33) 523.
- plants, (27) 133; (28) 524; (34) 627.
- sweet potatoes, (27) 435.
- trees, (27) 828.
- underground portions of herbaceous plants, (35) 131.

from different plants, physical qualities, (33) 426.

from flowering tubers, (39) 510.

from frosted and decayed potatoes, (39) 802.

gelatinization, (30) 461.

grains—

- cleavage in, (37) 410.
- movements in cells, (27) 426.
- structure, (28) 525.
- studies, (29) 409.

granules—

- gelatinization point, (30) 10.
- methods of examining, (26) 24.
- swelling in presence of crystalloids, (30) 111.

history of, (26) 106.

humification, (34) 516; (38) 26.

hydrolysis—

- by diastase, (28) 407.
- by malt amylase, (37) 613.
- erythrodextrin in, (40) 460.

identification, (32) 559.

in assimilating organs of Leguminosae, (30) 227.

in bananas dried at different temperatures, (35) 633.

industry in Germany, (29) 209; (32) 23, 315.

industry in United States, (30) 711, 791.

liquefaction in presence of salts, (35) 556.

liquefying and saccharifying power of, separation, (31) 609.

manufacture, handbook, (27) 15.

methods of analysis, (27) 205; (30) 813; (31) 806; (32) 505.

microscopy of, (32) 715.

of glutinous rice, notes, (27) 765.

Starch—Continued.

of grain sorghums, (35) 108, 616.

green leaves, (35) 131.

parent stock and hybrids, (36) 222.

origin and significance, (28) 201.

phosphoric acid in, (34) 710; (36) 501.

phosphorus content, (33) 203.

polysaccharids from, (30) 803.

products, composition and use, (29) 460.

products, examination, (34) 11.

reserve in birch and maple, (33) 523.

saccharification, (26) 309; (28) 19, 504, 609.

sirups, determination in fruit products, (26) 115 208.

soluble—

determination, (40) 312.

investigations, (35) 502.

preparation, (40) 312.

solutions, diastatic action, (36) 329.

solutions, stability, (35) 501.

specificity and complexity, (35) 468.

studies, (31) 828.

sugar, treatise, (32) 109.

transformation in potato leaves and stalks, (36) 126.

treatise, (31) 804.

use as food, (28) 460.

use in canned corn, (32) 161; (35) 765.

use in food products, (34) 167.

use in infant foods, (28) 359.

values in cattle feeding, (33) 673.

variation in leaves, (29) 827.

Starches, foreign, effect on quality of dough, (26) 761.

Starchy feeds, fortified, analyses, (26) 665.

Starfish—

analyses, (38) 626.

analyses and fertilizing value, (30) 520.

ground, fertilizing value, (40) 125.

Starlings—

at Springfield, Massachusetts, (26) 855.

feeding habits, (27) 550; (28) 450.

in Pennsylvania, Chester Co., (27) 254.

notes, (27) 355.

Starters—

lactic, tests, (35) 176.

propagation in dairies, (26) 478.

use in butter making, (32) 370.

Starvation—

effect on catalase content of tissues, (38) 869.

effect on creatin content of muscles, (30) 65.

studies, (35) 486; (37) 64, 365.

Stasisia rodhaini, notes, (36) 359.

State departments of agriculture, functions of, (34) 699.

State universities and agricultural colleges, duplication in, (33) 194.

Statenchyma, notes, (36) 730.

States Relations Service, *see* United States Department of Agriculture.

Statistical—

constants, estimating probable significance of, (31) 130.

error, tables of, (26) 773.

theories for meteorology and agriculture, (36) 419.

theory, notes, (32) 665.

Statisticians, tables for, (32) 362.

Statistics—*see also* Agricultural statistics.

method of calculating frequencies, (27) 275.

Statoliths—

in root tips, (36) 330.

nature and distribution in plants, (36) 729.

Stature, inheritance of, (40) 275.

Stauronotus maroccanus—

coccobacillus of, (31) 753.

control in Algeria, (36) 356.

control in Stavropol, (30) 754.

destruction by *Coccobacillus acidiorum*, (33) 154.

notes, (27) 757; (31) 850.

remedies, (33) 653.

Stauropus alternus, notes, (30) 753.

Steak, hamburger, analyses, (31) 854.

Steam—

effect on soil organisms, (38) 420.

effect on soils, (28) 123.

exhaust, utilization, (28) 892.

pipe systems, installation in dairies, (26) 893.

plowing in Bombay Presidency, (29) 592.

Steam—Continued.

- power v. electricity for filling silos, (32) 590.
- ships, sanitation, (38) 663.
- use in dairies, (27) 690.
- use on farms, (27) 484.
- v. electricity for threshing, (28) 685; (30) 590.
- v. electricity in drainage pumping, (31) 890.

Steapsin, properties, (32) 859.

Stearic acid—

- detection in ethyl alcohol, (29) 312.
- determination, (31) 508.
- determination in butter fat, (35) 111.
- salts, solubility, (35) 416.

Stearin of wool fat, investigations, (26) 612.

Stearins—

- determination, (35) 615.
- in fats and their behavior during hydrogenation, (35) 9.
- separation from fats, (33) 612.

Stecherium septentrionale, notes, (28) 56.

Steel pulleys, tests, (28) 590.

Steel, welding, (29) 593.

Steer—

- grand champion, feeding, (27) 97.
- manure, analyses, (39) 217.

Steers—see also Cattle.

- alfalfa silage for, (32) 769.
- beef v. dairy type, (38) 667.
- body measurements, (38) 69.
- bolly refuse for, (40) 366.
- breeding, effect on gains, (29) 667; (31) 469.
- composition at various stages of growth, (31) 168; (32) 99.
- composition of blood, (27) 499.
- concentrates for, in the South, (40) 873.
- cottonseed hulls for, (39) 272.
- cottonseed meal for, (29) 77.
- cull beans for, (40) 768.
- digestion experiments, (29) 366; (32) 69, 467, 668; (34) 169; (36) 469; (37) 65, 673; (38) 68; (39) 475.
- digestion experiments with clover hay and silage, (39) 166.
- distribution of fat in, (26) 366.
- excretion of fertilizing constituents, (39) 576.
- fattening—
 - on pasture, (28) 71; (31) 665.
 - rate and economy of gains, (37) 471.

- feeding experiments, (26) 266, 508; (27) 371, 872; (28) 69, 72, 169, 265, 266, 572, 669, 670, 873; (29) 169, 271, 272, 367, 368, 666, 667, 771, 870; (30) 372, 468, 567, 767, 869; (31) 169, 366, 469, 470; (32) 68, 259, 462, 467, 568, 768, 769, 864; (33) 265, 371, 373, 468, 569, 759; (34) 665, 666, 768, 866, 867; (35) 271, 475, 563, 670; (36) 65, 168, 269, 270, 470, 563, 564; (37) 66, 68, 270, 365, 471, 674, 768, 769; (38) 68, 270, 271, 272, 369, 667, 770, 870, 872, 873; (39) 168, 371, 474, 475, 575, 576; (40) 768.

fish meal for, (29) 270.

- grazing on Japanese cane, (37) 572.
- growth data, (30) 370; (35) 868.
- light v. heavy, (38) 667.
- limiting grain ration, (40) 369.
- maintenance, factors affecting cost, (33) 569.
- measurements, weights, and gains, (38) 371.
- on different rations, manure produced by, (40) 126.
- open shed and open lot for, (39) 168.
- open shed feeding, (28) 395.
- open yard v. stable for, (32) 462.
- "optimum age" for fattening off, (40) 667.
- pasture v. confinement for, (39) 474, 475.
- pasturing experiments, (31) 74; (39) 474, 475, 576, 880.
- pasturing fodder crops with, (38) 470.
- physical changes of feed residues in during digestion, (39) 476.
- poisoning with cottonseed meal, (26) 780.
- preparation of corn for, (33) 265; (38) 272.
- respiration experiments, (33) 72; (40) 365.
- roughages for, in the South, (40) 665.
- selection, (28) 72.
- sheltering experiments, (29) 271.
- silage for, (39) 272, 474, 475.
- slaughter tests at Smithfield Show, (31) 565.
- wintering, (38) 271; (39) 168, 370.
- wintering in Alabama, (31) 664.
- wintering on pasture, (28) 70.

Steganoptycha pinicolana, notes, (30) 550.

Steganosporium kosaroffii n.sp., description, (35) 45.

Stegomyia—

- calopus, see *Aedes argenteus*.
- fasciata, see *Argenteus*.
- scutellaris, notes, (28) 158.
- scutellaris, rôle of blood in reproduction of, (38) 160.

Steirastoma depressum, notes, (27) 857.

Stellaria—

- intermedia, eradication, (31) 739.
- media, analyses and feeding value, (33) 70.

Stem borer, Dura, notes, (27) 53.

Stem diseases, relation to soils, (26) 646.

Stemmatosteres apterus n.g. and n.sp., description, (40) 359.

Stemphylium—

- cucurbitacearum n.sp., description, (39) 355.
- sp. on cucumber, (39) 52.

Stenares n. sp., notes, (34) 357.

Stenichneumon trilineatus, protozoan parasites of, (30) 857.

Stenobothrus curtippennis, notes, (28) 59.

Stenocranophilus quadratus n.g. and n.sp., description, (32) 851.

Stenocranus saccharivorus, notes, (38) 459.

Stenomacra albella, notes, (26) 147; (30) 657.

Stenomacra sp., parasites of, (29) 358.

Stenomiesioidea, new genus, (39) 468.

Stenopelmatus sp. injurious to potatoes, (37) 157.

Stenopogon picticornis, predaceous on alfalfa caterpillar, (32) 58.

Stenoptycha pinicolana on larches, (34) 63.

Stenotaphrum americanum, notes, (26) 362.

Stenothrips graminum, notes, (28) 452.

Stephanitis—

- pyrioides, notes, (40) 753.
- pyrioides, studies, (37) 660, 761.
- rhododendri, notes, (36) 656.

Stephanoderes—

- cofeae, notes, (32) 847; (34) 851.
- n.sp., notes, (27) 458.
- sp., notes, (38) 363.

Stephanurus dentatus—

- description, (34) 280.
- effect on pigs, (32) 479.
- in Philippines, (30) 384.
- life history, (38) 882.
- localization and development in hogs, (29) 783; (31) 484.
- notes, (32) 783; (35) 878; (37) 482, 779.

Stephensonia n.g. and n.sp., description, (40) 650.

Steppes of Spain, treatise, (39) 122.

Sterculia alata irregularis, notes, (28) 821.

Stereum—

- albobadium, notes, (28) 551.
- hirsutum in black knot cankers, (32) 52.
- purpureum, notes, (26) 449, 749; (28) 348; (29) 46, 847; (30) 451; (34) 241; (35) 752; (38) 50.
- purpureum, studies, (33) 649.
- subpileatum, studies, (34) 448.

Sterictiphora—

- lineata, notes, (29) 252.
- zaddachi, notes, (38) 762.

Sterigmatocystis—

- castanea, notes, (28) 549.
- nigra—see also *Aspergillus niger*.
- amygdalin diastases in, (30) 241, 805.
- assimilation of zinc by, (30) 523.
- notes, (28) 844; (30) 450; (31) 841; (37) 51, 223.
- occurrence in sugar, (26) 505.
- studies, (32) 844.
- utilization of glucinum by, (29) 28.
- sp., notes, (31) 539.
- sp. on fig, (40) 52.
- sydowi n.sp., notes, (29) 345.

Sterility—

- and contagious abortion in cows, (29) 80, 81.
- in bovines and equines, (32) 679.
- cattle, (31) 285; (32) 82; (36) 777; (39) 391, 582.
- cows, treatment, (36) 675; (37) 379; (38) 286.
- hybrid plants, (31) 225.
- rumplless fowls, (26) 878.
- tobacco, (33) 129.

Sterilization, effect on—

- oxidation of sulphur in soils, (30) 223.
- plant food in soils, (29) 122.
- soils, (28) 417.

Sterilizer, steam, description, (35) 677.

Sterilizing outfit for field laboratory, (40) 843.

- Sterna* spp., notes, (27) 355.
- Stethorus*—
picipes, notes, (28) 457.
 spp. parasitic on red spider, (32) 157.
- Stewart, V. B., biographical sketch, (40) 199.
- Stick-lac insect, biology, (35) 463.
- Stictiella* n.g., description, (40) 264.
- Stictis panizzei*, notes, (26) 849.
- Stictocephala*—
festina, notes, (35) 657.
festina, studies, (32) 652.
inermis, notes, (32) 651.
- Stictococcus dimorphus*, notes, (34) 453.
- Stictomyia longicornis*, notes, (28) 451.
- Stictopterinae in British Museum, catalogue, (28) 856.
- Stiff-sickness in cattle, notes, (26) 882.
- Stigeosporium marattiacearum* n.sp., description, (37) 630.
- Stigmas, effect on germination of pollen, (29) 437.
- Stigonema* sp., notes (28) 31.
- Stijfziekte—
 in cattle, notes, (26) 882.
 notes, (28) 780.
 paper on, (29) 476.
- Stilbella*—
flavida, control, (40) 42.
flavida, notes, (29) 650; (32) 645.
flavida, studies, (33) 549.
nana, notes, (26) 851.
- Stilbum*—
flavum, studies, (30) 652, 849.
nanum, notes, (31) 49.
- Stillingia*—
 seeds, notes, (32) 613.
 tallow, detection, (29) 613.
- Stilpnolia salicis*, control by parasites, (39) 658.
- Stimulation, mechanical, in plants, (36) 525.
- Stink bugs, notes, (28) 654.
- Stink grass, analyses, (30) 565.
- Stinkweed—
 destruction, (30) 236.
 dissemination by farm animals, (26) 839.
 eradication, (39) 744.
- Stipa*—
capillata, drought resistance, (36) 734.
 spp., analyses, (30) 565.
tenacissima, culture and use, (33) 131.
tenacissima, notes, (31) 832.
vaseyi, cyanogen in, (33) 665.
- Stirastoma depressum*, notes, (35) 254.
- Stizobolin*, new protein, (39) 202.
- Stizobolium*—
aterrimum, destruction of scale insects by, (26) 534.
 beans, culture in Porto Rico, (29) 631.
 culture experiments, (35) 135, 528.
 deeringium, seed and pod structure, (38) 638.
pachylobium beans, feeding value, (34) 262.
pachylobium, description, (30) 828.
 spp. as cover crop for coconuts, etc., (33) 535.
 spp., hybridization experiments, (31) 734.
 spp. in Philippines, (38) 35.
 spp., semisterility in, (32) 726.
 spp., studies, (37) 328.
 varieties, (31) 635.
- Stizoboliums*, hybridization, (27) 339.
- Stock, *see* Livestock.
- Stock foods, *see* Feeding stuffs.
- Stocks—
 and scions, antagonism of, (31) 740.
 breeding experiments, (29) 433.
 double, notes, (35) 730, 731.
 for fruit trees, (32) 234; (40) 444.
 hybridization experiments, (29) 433.
 inheritance—
 in, (26) 433; (36) 729.
 of doubleness in, (30) 631; (36) 826.
 of hoariness in, (28) 228; (35) 731.
- Stockyards—
 disinfection, (36) 675.
 licensing, (39) 676.
- Stomach—
 absorption from, (28) 665.
 activity, inhibition, (28) 865.
 contents, methods of examining, (33) 310.
 glands, secretory, activity under influence of meat extract, (31) 662.
 physiology of, (28) 567, 864, 865; (32) 858; (33) 754; (34) 463; (40) 270, 766, 867.
- Stomach—Continued.
 worms—
 in Guam, (35) 878.
 notes, (40) 782.
 of lambs, (37) 691.
 of sheep, (37) 477; (39) 372; (40) 88.
- Stomata—
 and heliotropic sensitivity, relation, (32) 221.
 behavior during wilting, (35) 431.
 estimating aperture, (27) 222, 427.
 in relation to transpiration, (35) 27; (36) 329.
 opening and closure, (27) 221.
 regulation of, (33) 628.
 studies, (38) 821.
- Stomatal—
 aperture in cotton leaves, (27) 732.
 aperture in plants, studies, (38) 223.
 investigations, use of porometer in, (35) 431.
 movement in *Gossypium*, studies, (28) 822.
 movement, relation to water content of leaves, (26) 627.
- Stomatitis—
 contagious, notes, (37) 482.
 contagious pustular, in horses, (38) 586.
 differential diagnosis, (40) 283.
 in pigs and calves, (33) 774.
 infectious, (40) 183.
 infectious, in horses, (37) 692; (38) 179.
 necrotic, notes, (31) 879.
 vesicular—
 in cattle, (37) 81.
 horses and cattle, (38) 787; (39) 390.
 horses and mules, (37) 182.
 notes, (38) 80.
- Stomatocera pertorvus* n.sp., description, (37) 569.
- Stomatograph, description, (27) 732.
- Stomatothrips flavus* n.g. and n.sp., description, (27) 454.
- Stomoxys calcitrans*, *see* Stable fly.
- Stone—
 cells, formation in pears, (26) 449.
 flies injurious to vegetation, (39) 256.
 for road building, *see* Road materials.
 grading for road construction, (37) 787.
 meal, analyses, (38) 626.
 meal fertilizer, so-called, warning against, (33) 820.
 meal fertilizers, tests, (30) 327; (32) 520.
 regulations for national forests, (26) 340.
 road-making qualities, (37) 695.
- Stopcock, special, description, (40) 202.
- Storage—
 batteries, installation and care, (30) 190.
 central cooperative, in France, (40) 688.
 effect on—
 flour, (33) 161.
 milk, (28) 579.
 oxygen in water, (26) 418.
 potatoes, (29) 230.
 seed cotton, (29) 140.
 houses for apples, (32) 888.
 houses, management, (26) 441.
 rots, relation to temperature, (33) 545.
 structures, plans, (32) 486.
- Stored goods, insects affecting, (27) 453.
- Storehouses, insects affecting, (26) 553.
- Storer, F. H.—
 biographical sketch, (31) 698.
 tribute to and publications of, (33) 801.
- Stores—
 cooperative, (36) 192; (38) 894.
 cooperative—
 business practice and accounts for, (35) 89 3
 in the Northwest, (26) 895.
 United States, (26) 92.
 Wisconsin, (28) 895.
 insects affecting, (28) 248.
- Storm—
 at Abilene, Texas, (26) 27.
 Austin, Texas, (27) 316.
 Dubuque, Iowa, (29) 812.
 New York City, (27) 316.
 Pocatello, Idaho, (27) 616.
 San Diego, California, (37) 513.
 frequency changes in United States, (34) 118.
 in eastern North Carolina, (30) 417.
 of August 10, 1915, (34) 118.
 July 12–22, 1916, (36) 419.
 September 13–14, 1912, (28) 415.
 on Great Lakes, (30) 713.

Storm—Continued.

- severe, at Galena, Ill., (26) 214.
- severe local, notes, (26) 214.
- warning signals on Great Lakes, (35) 506.
- water run-off, determination, (38) 590.

Storms

- as affected by forests, (29) 842.
- autumn, relation to moon, (32) 316.
- electric, in western Kansas, (27) 616.
- in Belgium, (30) 17.
- eastern United States, (38) 717.
- Florida, (29) 721.
- Jamaica, (28) 716; (34) 615.
- Louisiana, (30) 417.
- Ohio, (29) 812.
- United States, (32) 316.
- Virginia, (29) 812.
- insurance against in Denmark, (27) 794.
- local, in Illinois, (28) 716.
- magnetic—
 - and rain, correlation, (38) 15.
 - of August, 1916, (38) 210.
 - sun spots, and rainfall, (38) 811.
- of June 16, 1912, (27) 616.
- papers on, (27) 816; (29) 510.
- terms used to designate, (34) 118.

Stramonium—

- as affected by composition of soils, (34) 18.
- breeding experiments, (30) 631.
- improvement by selection, (32) 143.

Strangles—

- immunization, (28) 784; (31) 378; (33) 87; (34) 580; (36) 179.
- in horses, (26) 373; (34) 185.
- in horses—
 - causative agent, (36) 85.
 - immunization, (32) 882.
 - in Philippines, (30) 186.
 - in Prussia, (27) 181.
- streptococcus, specificity, (29) 883.

Strategus—

- alveus, affecting coconut palms, (29) 858.
- anachoreta, notes, (26) 354.
- quadrifoveatus, notes, (36) 355.
- sp., notes, (39) 849.
- sp. on coconut, (40) 751.
- spp., notes, (36) 753.
- titanus, destructive to sugar cane, (28) 256.
- titanus, notes, (30) 356.

Stratiomys chamaeleon, notes, (37) 847.**Straussia longipennis**, notes, (40) 169.**Straw**—

- action as affected by distribution in soils, (35) 518.
- analyses, (26) 767.
- analyses and nutritive value, (35) 164.
- as feeding stuff, (35) 669.
- as human food, (34) 256.
- baler, description, (27) 191.
- breaking strength, tests, (33) 534.
- composition and digestibility, (34) 565.
- damaged, as source of potash, (34) 327.
- decomposition by Streptothrix, (27) 620.
- digestibility, (31) 667.
- effect on—
 - ammonifying power of soils, (35) 730.
 - denitrification in soils, (29) 817.
 - loamy sand, (29) 19.
 - nitrification, (40) 719.
 - nitrogen assimilation in plants, (26) 319.
- feeding, (38) 95.
- feeding value, (29) 271; (38) 168.
- fermenting power, (31) 413.
- fertilizing value, (31) 226, 822; (33) 326.
- for dairy heifers, (36) 873.
- grades of, (34) 528.
- humification, (31) 120.
- in legume silages, (39) 310, 878.
- litter, absorptive power, (33) 817, 818.
- manure, denitrifying action of, (26) 424.
- meal—
 - as feed for pigs, (34) 376.
 - bread for cattle, (34) 767.
 - composition and digestibility, (35) 474.
 - feeding value, (35) 376.
 - preparation and use, (36) 367.
- measuring for feed, (39) 834.
- stacks, changes in composition, (28) 768.
- wheat and oat, as bedding, (39) 621.

Straw—Continued.

- winter and summer grown, composition and digestibility, (32) 665.
- yields in Australia, (38) 133.

Strawberries—

- as affected by—
 - Rhizopus nigricans, (38) 252.
 - soils and fertilizers, (31) 534.
- breeding—
 - and testing in Minnesota, (40) 148.
 - experiments, (32) 338, 438, 835; (35) 144, 444; (36) 741; (39) 346, 349, 542; (40) 742.
 - experiments in Alaska, (40) 446.
- bud selection experiments, (31) 335; (33) 236.
- Carabidae injurious to, (39) 564.
- cold storage experiments, (31) 535.
- composition in relation to soils, (37) 648.
- crossing experiments, (30) 740; (36) 442.
- cultivated, origin, (35) 144.
- culture, (26) 741, 743; (27) 242; (28) 840; (29) 439, 745; (31) 441, 837; (32) 45, 541, 751; (33) 47, 142; (34) 42; (37) 447, 648; (38) 143, 246; (39) 242, 350, 447; (40) 838.
- culture—
 - experiments, (27) 242; (28) 142; (29) 137; (35) 444; (37) 243; (38) 41.
 - in Mexico, (34) 834.
 - North Carolina, (30) 444.
 - the South, (33) 47; (36) 241.
 - Wisconsin, (33) 47.
 - under irrigation, (31) 442; (32) 141.
- decay in transit, (31) 645.
- electroculture, (27) 231; (28) 533.
- everbearing, (38) 346; (40) 639.
- fertilizer experiments, (26) 31; (29) 145, 745; (35) 742; (37) 743, 832; (38) 540, 639.
- for home and commercial planting, (33) 537.
- forcing—
 - by electricity, (26) 136.
 - experiments, (37) 43.
 - with ether, (27) 145.
 - with ether and warm water, (31) 238.
- frost injuries, (27) 349.
- fruit and foliage relations, (39) 541.
- fruit setting in, (40) 838.
- graphic summary of seasonal work, (39) 495.
- hybridization experiments, (28) 435; (29) 742; (32) 45; (33) 637, 642.
- improvement in Minnesota, (34) 637.
- inoculation experiments with brown rot fungus, (33) 247.
- insects affecting, (28) 352; (30) 444; (32) 556; (35) 55.
- labor costs, (40) 192.
- liming experiments, (34) 150.
- localization of acids and sugars in, (36) 110.
- marketing, (31) 637.
- marketing and distribution in 1915, (37) 43.
- mulching experiments, (26) 743.
- new, description, (29) 436, 838; (31) 337; (33) 238.
- new varieties, (35) 448.
- Phytophthora on, (28) 55.
- picking and packing, (33) 47.
- preparation for market, (39) 646.
- preservation, (29) 312.
- preservation by freezing, (39) 344.
- preservation of shape and color, (28) 639.
- propagation and shipping experiments, (34) 637.
- protection against frost, (33) 237; (38) 641.
- red spider attacking, (32) 157; (39) 65.
- reducing and nonreducing sugars in, (29) 503.
- relation to typhoid fever, (28) 258.
- review of literature, (31) 339.
- rotting in transit, (37) 351; (39) 543.
- selection experiments, (37) 743.
- sex inheritance, (39) 349.
- sprayed, arsenic on, (38) 55.
- spraying experiments, (28) 652.
- sterility, (32) 834; (37) 240; (39) 48.
- summer care, (33) 698.
- supply and distribution in 1914, (33) 142.
- temperature of leaves, (39) 615.
- temperature when picked, relation to keeping quality, (40) 639.
- thrips affecting, (37) 659.
- transportation, (39) 141.
- treatise, (27) 40, 242; (28) 840; (37) 42, 648.
- varieties, (26) 743; (27) 241, 842; (28) 542; (29) 145, 439; (31) 47, 442; (32) 538; (33) 47, 142, 237; (34) 231; (35) 742; (37) 243; (38) 246, 344, 634; (39) 139; (40) 340, 838.

Strawberries—Continued.

- varieties—
 - for New York, (26) 239.
 - in Oklahoma, (27) 241.
 - in Oregon, (32) 639.
 - new, (39) 543.
 - of North America, (37) 143.
 - variety tests, (39) 350, 447; (40) 340.
 - vitality of pollen, (29) 326.
 - winterkilling, (32) 834.
- Strawberry—**
- aphis, notes, (30) 53.
 - Botrytis and Rhizopus diseases, staining mycelium, (39) 248.
 - crown girdler, notes, (28) 156.
 - crown girdler, studies, (36) 156; (38) 256.
 - diseases, control, (39) 652.
 - diseases, notes, (26) 743.
 - fla beetle, notes, (29) 761.
 - fruit rot, notes, (38) 646.
 - fruit rots, descriptions, (33) 744.
 - gray mold, notes, (39) 452.
 - juice, preparation, (33) 316.
 - juice, studies, (29) 711.
 - leaf beetle, notes, (38) 154; (40) 64.
 - leaf petiole gall, notes, (34) 362.
 - leaf roller—
 - biology, (38) 862.
 - notes, (28) 156.
 - studies, (40) 755.
 - leaf spot, notes, (28) 748; (31) 644; (40) 158.
 - pests, notes, (29) 158.
 - pollen, germination, (35) 731.
 - raspberry hybrid, description, (28) 742.
 - Rhizopus disease, staining mycelium, (39) 248.
 - root louse, *see* Aphis forbesi.
 - root rot, notes, (39) 353.
 - root weevil—
 - life history and remedies, (30) 58.
 - notes, (32) 448; (35) 552; (37) 54, 568.
 - remedies, (38) 864.
 - studies, (32) 556.
 - roots, transportation regulations, (30) 346.
 - roots, winterkilling, (38) 646.
 - rootworm, notes, (35) 54.
 - rots, notes, (36) 452.
 - rots, studies, (35) 453.
 - rust, notes, (28) 235.
 - slugs, studies, (34) 758.
 - soils, management, (32) 141.
 - spot, notes, (32) 544.
 - weevil—
 - notes, (27) 755; (28) 752; (34) 158.
 - remedies, (35) 364, 661; (37) 466.
 - studies, (36) 855; (38) 163; (39) 761, 868.
 - white fly, notes, (33) 58.
 - wine, preparation, (27) 412.
- Stream—**
- flow—
 - as affected by ice, (30) 318.
 - forecasting, (33) 775, 776.
 - in India, (37) 716.
 - in Massachusetts, (30) 318.
 - maximum, determination, (35) 684.
 - predicting, (29) 314.
 - relation to forest denudation, (36) 843.
 - relation to forests, (26) 51; (28) 643; (33) 885; (36) 346.
 - relation to precipitation, (29) 121, 812; (35) 116.
 - gage data, skew frequency curve, (37) 513.
 - gaging—
 - handbook, (29) 487.
 - in Wyoming, (29) 84; (32) 390.
 - methods, (35) 578.
 - relation to hydraulics, (33) 484.
 - stations, artificial controls for, (29) 683.
 - stations in Pacific coast basins, (33) 882.
 - stations of United States Geological Survey, (33) 89.
 - measurement—
 - new formulas and diagrams for, (33) 882.
 - stations, artificial control stations for, (33) 484.
 - stations, equipment for, (34) 84.
 - use of automatic gages in, (33) 777.
 - use of automobile in, (33) 777.
 - measurements, (28) 716; (31) 383, 587.
 - measurements—
 - accuracy, (28) 889; (36) 484.

Stream—Continued.

- measurements—continued.
 - chemical method, (32) 685.
 - formulas for, (32) 685.
 - in Alabama, (36) 885.
 - Alberta and Saskatchewan, (33) 391; (35) 490; (37) 187.
 - Arizona, (33) 87.
 - California, (28) 618.
 - Canada, (27) 317; (29) 683.
 - Colorado, (36) 582.
 - Idaho, (28) 890; (33) 583.
 - New York, (28) 588; (36) 184, 284.
 - North Dakota, (33) 683; (37) 84.
 - Texas, (36) 384.
 - methods, (38) 186.
 - winter, in western Canada, (33) 89.
 - pollution, (29) 617.
 - pollution in Illinois, (35) 389.
 - pollution, laws in Indiana, (35) 787.
- Streams—**
- as affected by forests, (27) 348.
 - contaminated, dangers from, (29) 880.
 - mountain, bridging, (35) 391.
 - of Alps and Pyrenees, silt carried by, (33) 718, 719.
 - of California, measurement, (26) 317.
 - of California, notes, (29) 510, 721; (30) 713.
 - self-purification, (37) 693.
 - silt-laden, measurement, (36) 484.
- Street sweepings—**
- analyses, (29) 823; (35) 128.
 - analyses and fertilizing value, (26) 429.
 - fertilizers from, (33) 219.
 - fertilizing value, (27) 629.
- Streets, cleaning, (34) 484.**
- Streets, paving, (38) 789.**
- Strepsiptera, studies, (40) 266.**
- Streptococci—**
- and lactic ferments, action of antiseptics on, (38) 77.
 - blood agar for study of, (40) 881.
 - equine and bovine, in human infections, (36) 577.
 - from milk, differentiation, (27) 177.
 - growth and viability in milk and its products, (32) 174.
 - hemolysin production by, (33) 83.
 - hemolytic, filterable toxic product, (40) 83.
 - hemolytic, in milk, (35) 680; (40) 478.
 - in butter, (26) 478; (31) 576.
 - condensed milk, (26) 81.
 - milk, (26) 777; (33) 382.
 - milk and human throat, comparison, (26) 575; (28) 674.
 - milk, origin, (30) 875.
 - milk, studies, (26) 575; (28) 473, 580.
 - udder inflammation, (39) 890.
 - invading *Cryptococcus farciminosus* lesions, (40) 680.
 - of strangles, specificity, (29) 883.
 - pathogenic, hemolysins produced by, (28) 179.
 - pathogenic, studies, (39) 84, 888.
 - significance in water supplies, (36) 489.
 - studies, (40) 881.
 - survival of pasteurization by, (31) 574.
 - transmission by stable fly, (32) 552.
- Streptococci—**
- diseases in man, treatment, (31) 479.
 - diseases, treatment, (26) 578.
 - infection in sheep, (26) 683.
 - infections of deep air passages of horses, (31) 287.
 - septicemia, treatment, (39) 488.
 - serum, method of action, (32) 179.
- Streptococcus—**
- acid lactic, notes, (26) 880.
 - apis, relation to foulbrood of bees, (27) 563.
 - disparis n.sp., description, (39) 465.
 - equi, characteristics of, (26) 177.
 - equi, notes, (30) 186.
 - equi, review of investigations, (36) 85.
 - hemolyticus, human and bovine, differentiation, (40) 677.
 - immunity, studies, (40) 676.
 - infection of udders, (40) 87, 184.
 - infection, review of investigations, (40) 184.
 - lacticus—
 - in Stilton cheese, (28) 879.
 - origin in milk, (34) 473.

Streptococcus—Continued.

- lacticus*—continued.
 - relation to milk acidity, (32) 872; (33) 675.
 - types of, (34) 77.
- lactis fulvus*, itinerary in butter manufacture, (39) 78.
- lanceolatus*, notes, (26) 176, 586.
- pyogenes*—
 - affecting pigs, (30) 185.
 - culture medium for, (40) 180.
 - destruction by periodol, (39) 80.
- solani* n.sp., notes, (37) 549.
- spp., differentiation, (27) 177, 281.
- spp., notes, (26) 575.
- spp., proteolysis of, (35) 204.
- vaccine, tests, (34) 580.

Streptolysin—

- immunity to, (32) 179.
- investigations, (30) 78.

Streptothrices, metabolism, (40) 478.**Streptothrix**—

- infection of udders, (40) 184, 185.
- madurae*, biology and morphology, (26) 281.
- muris ratti*, notes, (35) 487.
- of rat-bite fever, (40) 479.
- putorii* associated with weasel-bite fever, (39) 889.
- rôle in soils, (27) 620.
- sp., ammonifying power, (31) 317.
- Streptotrichosis* in a bullock, (27) 785.

Stresses—

- determination in tunnel sections, (29) 593.
- on concrete pavement slabs, determination, (31) 186.

Striga lutea—

- eradication, (36) 236.
- notes, (31) 842; (40) 48.

Stromatinia—

- cinerea*, notes, (40) 749.
- geranii* n.sp., description, (40) 249.
- Strangle* sp., destructive to deer, (26) 653.

Strongyles—

- affecting sheep in Algeria, (31) 86.
- in horses, (27) 887.

Strongylidae in horses, (39) 686, 892.**Strongylidosis**—

- equine, studies, (35) 489.
- equine, treatment, (40) 586.

Strongyloides longus in pigs, (35) 79.**Strongyloplasma avium**, notes, (28) 483.**Strongylosis**—

- congenital bronchial, in sheep, (27) 886.
- encephalo-embolic, in horses, (28) 887.
- encephalo-embolic, notes, (29) 478.
- in ruminants, treatment, (28) 379.
- pulmonary, notes, (37) 179.

Strongylus—see also Lungworms and Stomach worms.

- armatus*, affecting mules, (28) 82.
- capillaris* n.sp., description, (30) 884.
- cervicornis*, notes, (27) 86.
- douglasii*, life history, (33) 334.
- douglasii*, notes, (26) 487.
- filaria*, first stages, (28) 182.
- (*Haemonchus*) *contortus*, life history, (29) 476.
- micrurus*, notes, (31) 85.
- notes, (40) 782.
- paradoxus*, description, (34) 280.
- paradoxus*, notes, (35) 878.
- rufescens*, notes, (30) 351.
- spp., in lungs of sheep and deer, (30) 285.
- spp., physiological investigations, (31) 679.
- studies, (34) 879.

Strontium—

- and calcium, separating and identifying, (26) 21.
- carbide, manufacture, (28) 222.
- detection, (28) 409.
- determination in—
 - presence of phosphoric acid and iron, (36) 14.
 - water, (29) 797; (32) 297; (37) 506.
- effect on plant growth, (40) 819.
- effect on *Spirogyra*, (38) 27.
- function in plants, (30) 523.
- in plants, (38) 409.
- in soils, (31) 720.
- salts, effect on nodule production in vetch, (32) 728.
- salts, effect on wheat, (36) 520.
- separation from barium and calcium, (26) 204.

Strontium—Continued.

- separation from calcium, (26) 205.
- toxicity toward plants, (30) 128.

1-Strophanthin in bark and seeds of oleander, (26) 202.**Strophanthus** spp., agglutinating properties, (31) 774.**Strophosomus**—

- coryli*, notes, (27) 552.
- obesus*, notes, (27) 458.

Strumella coryneidea, description, (31) 451.**Strychnin**—

- detection in water, (34) 410.
- effect on plant growth, (37) 632.
- effect on somatic cells, (26) 229.
- sulphate, effect on quail, (34) 850.
- use against polyneuritis, (28) 761.

Stychnos spinosa, notes, (30) 145.**Stubbs, J. E.**, biographical sketch, (31) 100.**Student budgets** in Smith College, (34) 762.**Students**—

- agricultural, practice work for, (28) 597.
- graduate, as research assistants in experiment stations, (36) 102.
- high school, standard of living, (29) 767.

Stump—

- burner, description, (37) 385.
- growths, abnormalities of, (26) 37.
- puller, description and operation, (27) 387.
- puller, hand-winch, description, (27) 191.
- pulling machine, description, (32) 385.

Stumps—

- blasting, (29) 183; (32) 85.
- blasting experiments, (28) 590; (31) 589.
- boring machine for, (31) 486.
- burning, (32) 485; (35) 84; (37) 96.
- char-pit method of destruction, (26) 787; (27) 890.
- destruction with acids, (28) 485; (31) 92.
- pulling and burning, (37) 87.
- removal, (30) 86; (32) 589; (35) 583; (36) 89, 785; (39) 493, 687; (40) 90.
- removal with dynamite, (26) 187; (35) 887.
- removing with explosives, (26) 591.
- Sturmia scutellata*, biology, (36) 858.

Sturnella—

- neglecta*—
 - destruction of locusts by, (28) 351.
 - economic importance, (30) 654.
 - feeding habits, (28) 351.
- spp., feeding habits, (29) 452.

Sturnira lilium parvidens n.subsp., description, (37) 757.**Sturnus vulgaris**—

- at Springfield, Massachusetts, (26) 855.
- feeding habits, (28) 450.
- in Pennsylvania, Chester Co., (27) 254.

Stylopidea picta, notes, (28) 451.**Stylops**—

- anatomy and life history, (32) 62.

British, synopsis, (39) 664.**Styrax**—

- japonica* seeds, fatty oil of, (35) 611.
- obassia*, oil of, (37) 109.

Stysanus—

- spp. in Norway, (31) 327.

stemonitis, notes, (32) 50.**Suaeda maritima**, growth in presence of salt, (33) 222.**Subcapsular cysts** in domestic animals, (26) 176.**Subirrigation**—

- for golf greens, (31) 889.
- in Florida, (36) 88.
- in Texas, (27) 788.
- v. surface irrigation for vegetables, (29) 638.

Sublimiform—

- fungicidal value, (31) 242.
- use against grain smuts, (27) 445.

Subsoil water—

- effect on cotton crop of India, (26) 417.
- of central United States, (27) 511.
- of United States, (28) 811.

Subsoiling—

- effect on yield of oats, (31) 41.
- experiments, (28) 827; (30) 121, 236; (37) 272, 732, 733.
- experiments with dynamite, (31) 589; (33) 90.
- experiments with gelignite, (29) 785.
- in the Great Plains, (39) 812.
- notes, (31) 131; (38) 334.
- with explosives, (26) 91; (29) 183; (32) 884.

- Subsoils—**
 analyses, (28) 736.
 blasting experiments, (30) 386.
 humid, rawness, (40) 121.
 moistness, interpretation of field observations on, (40) 211.
 rawness, (39) 620, 621.
Succinate, action on isolated intestine, (37) 471.
Succinea risei, dissemination by bobolinks, (30) 851.
Succinic acid—
 assimilation by plants, (31) 426.
 determination, (39) 715.
 determination in wine, (31) 13.
 effect on carbon assimilation of plants, (27) 525.
 extraction with ether, (37) 414.
 in beef, (30) 61; (31) 759.
 in honey, (28) 166.
 in silage, (27) 205.
 isolation from soils, (28) 418.
 reaction of, (33) 414.
Suck fly, notes, (28) 654.
Sucrose—
 activation by acids, (27) 803.
 from koji, activity in acid solutions, (30) 311.
 protein substances of, (32) 803.
 thermoregeneration of, (32) 803.
Sucrose—
 acetates of, (34) 408.
 action of acids on, (37) 802.
 action of symbiotes on, (40) 464.
 bromination as affected by catalyzers, (40) 613.
 content of molasses, determination, (40) 206.
 content of soy beans, (28) 166.
 detection in grape juice and wines, (29) 310.
 detection in maple sirup, (31) 610.
 determination, (27) 812; (37) 506; (40) 507.
 determination in—
 beets, (32) 110.
 cane products, (35) 716.
 condensed milk, (34) 612.
 confectionery, (30) 206.
 milk chocolate, (40) 14.
 molasses, (26) 207; (27) 508; (28) 22, 613, 711, 712, 713; (30) 811; (35) 504; (38) 113.
 presence of lactose, (32) 414.
 presence of reducing sugars, (28) 613; (29) 112; (35) 316, 805.
 effect on action of alcohol on plant cells, (34) 333.
 in American grapes, (35) 202.
 in bananas dried at different temperatures, (35) 633.
 in grape leaves, (27) 731.
 inversion by invertase, (30) 811.
 inversion of, (34) 13.
 parental administration, (35) 483.
 synthesis in plant cells, (36) 609.
Sud cake, analyses, (32) 32.
Sudan grass—
 analyses, (34) 577; (36) 38; (39) 737.
 analyses and use, (32) 740.
 and Johnson grass seeds, distinguishing characters, (35) 834; (37) 236.
 and millet, comparative yields, (40) 328.
 as catch crop after oats, (40) 729.
 dry-farm crop, (39) 736.
 forage crop, (31) 737, 829; (35) 337; (37) 532; (38) 634.
 hay crop, (38) 630.
 midsummer forage crop, (39) 532.
 pasture crop, (38) 470, 681; (39) 434, 880; (40) 729.
 silage crop, (38) 174; (39) 134.
 bacterial disease in Salt Lake Valley, (33) 851.
 breeding experiments, (40) 32.
 composition, relation to yield and maturity, (40) 330.
 culture, (32) 226, 598; (34) 694; (37) 136.
 culture—
 and feeding value, (34) 831.
 experiments, (32) 526, 739; (33) 31, 32, 333, 830; (34) 227, 229, 630; (35) 229, 336, 526, 640; (36) 38, 131, 133, 332, 829; (37) 226, 227, 236, 329, 330, 529; (38) 334, 431, 827, 829, 830, 831; (39) 227, 737, 835; (40) 32, 729.
 experiments in Hawaii, (40) 823.
 for hay, (37) 436.
 for hay and seed, (33) 41.
 for seed, (37) 436.
Sudan grass—Continued.
 culture—continued.
 in Arizona, (32) 226.
 cotton belt, (32) 533.
 Cuba, (38) 536.
 Guam, (40) 327.
 Hawaii, (32) 729.
 New Mexico, (40) 18, 36.
 Philippines, (26) 361; (40) 231.
 sand hills of Nebraska, (35) 827.
 southern Texas, (32) 332.
 Virginia, (36) 637.
 Wisconsin, (36) 828.
 under dry farming, (36) 529; (37) 329.
 under irrigation, (33) 228.
 digestibility, (39) 171.
 for late planting, (37) 436.
 germination, (40) 222.
 green manuring experiments, (39) 31.
 hay, analyses, (37) 236.
 hay, composition and digestibility, (35) 640; (39) 672; (40) 71.
 hay, digestibility, (39) 171.
 hay, digestibility and productive value, (37) 865.
 insects affecting, (33) 746; (34) 449.
 irrigation experiments, (34) 735.
 notes, (29) 233, 428; (37) 29.
 pasture experiments, (40) 32, 36.
 planting and cutting, (38) 630.
 seed, resistance to desiccation, (40) 39.
 seeding and harvesting experiments, (40) 624.
 seeding experiments, (37) 32, 330, 331; (38) 32; (39) 129, 736; (40) 36, 331, 522.
 silage, preservation and use, (37) 672.
 starch content, (35) 108.
 transpiration in, (36) 226.
 varieties, (38) 829, 830.
 yields, (35) 528; (39) 128, 336; (40) 331, 733.
Sudan III for detection of fat, (39) 313.
Sugar—see also Beet sugar and Cane sugar.
 absorption by cuttings, (39) 826.
 acetyl derivatives, (37) 201.
 added invert, detection in honey, (32) 298.
 addition to Bordeaux mixture, (33) 237.
 aldehyde, determination, (37) 714.
 alpha and beta, rotatory powers, (37) 410.
 analyses, (30) 712.
 analyses and food value, (37) 570.
 analysis, animal charcoals in, (36) 807.
 analysis, treatise, (30) 315; (31) 315.
 apple as stock for cherimoya, (32) 143.
 apples, propagation, (27) 537.
 as coagulant for rubber, (37) 348; (40) 641.
 feeding stuff, (32) 862; (33) 467; (34) 566.
 wound dressing, (36) 178; (37) 82, 876.
 assimilation by pigs, (32) 170.
 bacterial deterioration, (27) 12.
Sugar beet—see also Beet.
 areas, enterprise studies, (40) 299.
 bacterial disease, studies, (30) 349; (31) 243.
 blight, notes, (26) 548.
 chips, analyses, (27) 570.
 chlorosis, description, (37) 249.
 crown gall, notes, (37) 249.
 crown gall, studies, (33) 147.
 crowns and leaves, fertilizing value, (35) 127.
 curly leaf, bacterial origin, (34) 645.
 curly top—
 and mosaic, notes, (36) 847.
 cause, (38) 250.
 notes, (26) 348; (29) 550; (34) 241.
 relation to wild vegetation, (37) 847.
 studies, (26) 848; (28) 314; (29) 48; (32) 238; (33) 743; (39) 763.
 transmission by insects, (34) 646.
 damping-off, causative agent, (29) 646.
 diseases—
 and animal enemies in Germany and Austria-Hungary, (35) 455.
 and enemies in Bohemia, (33) 851.
 notes, (29) 153; (30) 649, 853; (31) 232, 543; (34) 350; (35) 350; (39) 353.
 notes and treatment, (28) 346.
 review of literature, (26) 848; (27) 246; (29) 246; (31) 747.
 studies, (33) 246.
 treatment, (26) 648.

Sugar beet—Continued.

- farms, organization, (40) 488.
- flakes, analyses, (27) 872.
- flour, manufacture and use, (30) 15.
- industry in—
 - Australia, (40) 337.
 - Europe, handbooks, (29) 142.
 - Germany, (29) 113.
 - Ontario, (40) 336.
 - United States, (25) 336; (40) 139.
- land, blown-out, reeropping, (40) 431.
- leafhopper, *see* Beet leafhopper.
- leaf-spot—
 - description, (32) 50.
 - effects, (28) 43.
 - studies, (40) 344.
 - treatment, (29) 48.
- leaves, dried, analyses, (27) 872.
- meal, analyses, (35) 374; (39) 370.
- molasses, raffinose in, (40) 313.
- mosaic disease, studies, (33) 743.
- nematode, studies, (35) 150.
- nematode, treatment, (36) 450.
- plant louse, remedies, (28) 563.
- powder to replace refined sugar, (40) 715.
- products—
 - analyses, (39) 417.
 - as source of alcohol, (35) 113.
 - feeding value and pathological effects, (32) 99.
- residues as cattle feed, (38) 368.
- root louse—
 - control, (26) 648; (33) 430; (36) 154; (38) 130; (39) 863; (40) 452.
 - insect enemy, (39) 562.
 - life history, (31) 250.
 - notes, (33) 857; (36) 55; (37) 255; (39) 258, 464.
 - relation to soil moisture, (33) 357.
- root rot—
 - causative agent, (29) 646.
 - studies, (34) 52; (36) 147.
- roots, bacterial diseases of, (31) 842.
- roots, decomposition in soil, (40) 214.
- rot, review of investigations, (29) 550.
- seed—
 - dried, germination and culture tests with, (31) 632.
 - germination as affected by drying, (29) 739.
 - germination tests, (27) 431.
 - industry in France, (38) 537; (40) 36.
 - industry in Russia, (37) 443.
 - industry in United States, (37) 540.
 - industry, treatise, (40) 441.
 - production, (32) 740; (33) 226.
 - selection, (31) 232.
 - single-germ, production, (33) 532.
 - soaking in superphosphate solution, (31) 632.
 - transmission of high sugar content by, (30) 834.
 - valuation, (31) 42; (33) 135.
- seedlings in relation to *Phoma betae*, (34) 156.
- sirup, manufacture, (37) 511.
- slices for milch cows, (27) 374.
- soils, nitrates in, (40) 300.
- thrips, studies, (36) 153.
- tops, analyses and digestibility, (29) 367.
- tops, analyses and feeding value, (33) 169; (34) 664.
- tops and leaves, feeding value, (38) 168.
- tops for dairy animals, (30) 473.
- tumors, formation, (34) 845.
- waste, utilization, (23) 767.
- webworm, *see* *Loxostege sticticalis*.
- wireworm, studies, (30) 758.
- yellow, notes, (35) 245.

Sugar beets—

- absorption and utilization of plant foods by, (26) 377.
- analyses, (23) 132, 409, 770; (27) 36, 334, 341, 371, 469, 570; (23) 493; (29) 113; (30) 466, 697; (31) 42, 436, 737, 864; (32) 431, 435; (33) 434; (35) 634.
- and mangels, comparative yields, (40) 431.
- and sorghum, comparison, (40) 325.
- and their products in bread making, (34) 660.
- animals affecting, (28) 654; (30) 853; (31) 58, 649.
- as affected by—
 - defoliation and nitrates, (31) 435.
 - depth of fertilization, (30) 621.
 - fertilizers, (27) 123, 433, 534; (31) 736.

Sugar beets—Continued.

- as affected by—continued.
 - lead nitrate, (31) 226.
 - nitrogenous fertilizers, (23) 332.
 - precipitation, (26) 738.
 - size of seed, (31) 42.
 - spacing, (31) 633; (32) 41.
 - static electricity, (27) 500.
 - water, (27) 837.
- as host of *Puccinia subnitens*, (31) 842.
- as human food, (33) 866.
- as silage crop, (39) 134.
- assimilation of—
 - carbohydrates by, (26) 626.
 - nitrogen by, (33) 434.
- breeding experiments, (37) 442.
- catalytic fertilizers for, (26) 225.
- changes in during storage, (27) 210.
- classification, (30) 439.
- classification of varieties, (27) 31.
- composition, (27) 838.
- composition as affected by—
 - drought, (30) 736.
 - irrigation, (28) 332.
 - nitrate, (26) 196.
 - size, (26) 738.
 - sodium manures, (28) 34.
- composition—
 - at various stages, (36) 835.
 - during seed-producing period, (33) 135.
 - in relation to meteorological conditions, (37) 539.
- continuous culture, (40) 419.
- correlation studies, (36) 629; (37) 28, 642.
- cost of production, (27) 530, 637; (35) 138; (40) 139, 440, 737.
- cost of production in Austria, (28) 594.
- critical period of growing season, (39) 811.
- culture, (27) 32, 435; (28) 336; (30) 736; (31) 35, 298; (34) 482; (39) 834.
- culture—
 - experiments, (27) 530, 534, 833; (28) 43, 637; (29) 138, 142, 223, 427; (30) 133, 638; (31) 333; (32) 132, 136, 225, 430, 435, 526; (33) 31; (34) 34, 37, 229; (35) 526; (36) 32, 132, 133, 228, 533; (37) 30, 230, 435, 644; (38) 341, 536, 634; (39) 124, 334, 834; (40) 336, 735.
- in Algeria, (38) 237.
- Austria-Hungary, (31) 689.
- California, (37) 443; (40) 737.
- Cape of Good Hope, (29) 432.
- Colorado, (40) 138.
- England, (29) 432.
- Java, (29) 142.
- Massachusetts, (30) 140.
- Michigan, (39) 320.
- Michigan and Ohio, (40) 440.
- Montana, (40) 139.
- Norfolk and Suffolk, (33) 532.
- nutrient solutions, (26) 333.
- Ohio, (29) 793.
- Rhodesia, (27) 32, 637.
- South Africa, (38) 536.
- South Dakota, (29) 635; (37) 99; (40) 32.
- southwestern Russia, (37) 339.
- Utah, (40) 633.
- Washington, (36) 137.
- losses in, (33) 434.
- on moorland, (30) 229.
- treatise, (32) 436.
- under dry land conditions, (31) 429.
- under humid conditions, (30) 529.
- under irrigation, (30) 529; (34) 528.
- defoliating experiments, (30) 39; (36) 233, 732.
- deterioration in quality, (28) 43; (31) 435.
- determination of density, (36) 716.
- determination of fructose in, (40) 507.
- development as affected by light, (27) 642.
- distance experiments, (29) 32; (32) 830.
- drying, (35) 417.
- effect on—
 - composition of milk fat, (33) 674.
 - milk, (34) 472.
 - soil productivity, (28) 336.
- electroculture experiments, (27) 231; (36) 227; (40) 428.
- ensiling, (38) 130.
- examination, (27) 64.
- examination and valuation, (28) 715.
- feeding value, (40) 32.

Sugar beets—Continued.

- fertilizer experiments, (26) 232, 424, 425, 438, 631, 636; (27) 32, 125, 530, 534; (28) 43, 44, 221, 637, 723; (29) 126, 137; (30) 134, 220, 229, 428, 438, 529, 624, 638, 834; (31) 123, 126, 133, 233, 328, 422, 430, 733, 820, 821, 833; (32) 136, 217, 230, 830; (33) 135, 434, 625, 728; (34) 24, 38, 519; (35) 22, 427, 629, 736; (36) 220, 533; (38) 634; (39) 427, 617; (40) 331, 421, 430, 621, 735.
- flower from, (29) 161.
- following alfalfa, (40) 430.
- for late planting, (37) 436.
- for milch cows, (30) 573.
- forage, production and use, (26) 132.
- formation of saccharose in, (27) 526.
- from same seed ball, characteristics, (31) 633.
- germination, (30) 525.
- glycronic acid from, (26) 307.
- graphic summary of seasonal work, (39) 495.
- green manuring experiments, (32) 217, 721.
- growth as affected by—
 - alkali salts, (34) 125.
 - light, (28) 825.
 - soils, (29) 416.
- growth in sunlight and in shade, (30) 234.
- improvement, (28) 336.
- increase in sucrose content after removal from soil, (38) 536.
- injurious nitrogen in, (30) 15.
- inorganic fertilizers for, (27) 500.
- insects affecting, (26) 648, 848; (28) 346, 352; (29) 153; (31) 58, 232, 649; (39) 160, 464.
- inspection in Belgium, (27) 14.
- irrigated, manuring experiments, (40) 421.
- irrigation experiments, (28) 130, 133, 134, 230, 827; (29) 32, 226; (30) 35; (31) 328, 732; (32) 37, 225; (33) 287; (35) 637; (36) 35; (37) 30, 32, 85, 741, 822; (38) 320; (40) 331.
- leaf infection with *Cercospora beticola*, (34) 845.
- liming experiments, (40) 134.
- localization of betain in, (27) 203.
- loss in weight by drying, (33) 135.
- losses in the silo, (36) 132.
- magnesia fertilizer for, (30) 234.
- manganese fertilizers for, (27) 643.
- manufacture of alcohol from, (26) 213, 512, 809.
- manuring experiments, (39) 617.
- methods of—
 - analysis, (28) 413; (31) 806; (38) 536.
 - sampling, (26) 409.
 - variety testing, (26) 436.
- mineral matter, composition, (39) 808.
- morphology and physiology, relation to climate, (40) 531.
- mother, isolation of flower stalk, (33) 832.
- nematodes affecting, (27) 151, 152; (33) 851.
- nitrogen content, fluctuation in, (31) 633.
- nitrogenous constituents of, (26) 116.
- nonprotein nitrogenous substances of, (28) 810.
- planting and thinning experiments, (33) 430.
- planting dates, (33) 631.
- poisoning of livestock by, (34) 80.
- pollination by field bees, (26) 332.
- pollination by thrips, (31) 549.
- potash compounds in, (31) 325.
- potash fertilizers for, (26) 526.
- premature flowering, (27) 36.
- production in—
 - 1913, (31) 391.
 - United States, (26) 94; (39) 237.
 - Utah and Idaho, (39) 640.
- quality as affected by weather, (26) 415.
- radioactive fertilizer for, (31) 31, 129.
- relation of—
 - foliage development to sugar content, (31) 233.
 - size of seed to yield, (26) 434.
 - size to sugar content, (30) 208; (38) 729.
 - tops to roots, (31) 733.
 - weight to composition, (31) 19.
 - yield to sugar content, (26) 43.
- relation to climate, (28) 27.
- review of investigations, (31) 232.
- rotation experiments, (33) 429, 828, 829; (36) 829; (38) 129; (40) 331, 430.
- saccharose in, (33) 235; (38) 26.
- salt for, (26) 34.
- second season, analyses, (31) 737; (33) 135.
- seed infection in, (34) 747.
- seedling depths, (40) 227, 336.

Sugar beets—Continued.

- seedling experiments, (29) 138, 427; (31) 334.
 - spacing experiments, (40) 336.
 - spring v. fall planting, (37) 32.
 - statistics, (28) 335.
 - studies, (27) 642.
 - subsoiling experiments, (29) 137.
 - sugar content in relation to—
 - chemical characters, (35) 641.
 - foliage, (34) 38.
 - weight, (35) 640.
 - sulphur in, (31) 817.
 - thinning dates, (40) 430.
 - thinning experiments, (40) 336.
 - transplanting experiments, (36) 533.
 - treatise, (26) 737; (37) 533.
 - tumor formation in, (27) 352.
 - utilization of nonsugar substances of, (26) 612.
 - v. mangels for western Nebraska, (32) 224.
 - variability of nitrogen content, (29) 536.
 - variation and correlation in, (37) 642.
 - variation in sugar content, (34) 37; (36) 233.
 - varieties, (26) 631, 733; (27) 32, 334, 530, 534, 637, 736; (29) 137, 138, 142, 222, 225, 228, 233, 530; (30) 134, 229, 439; (31) 133, 829; (32) 37, 431, 435, 528, 532, 630; (33) 33, 728, 831; (34) 37; (35) 35, 229, 637; (36) 37, 527, 533; (38) 237, 341, 536, 634.
 - variety tests, (39) 640; (40) 336, 735.
 - water requirements, (29) 826; (32) 127.
 - weight and sugar content, relationship, (27) 642.
 - yield—
 - as affected by breaking of leaves, (35) 442.
 - in relation to direction of rows, (34) 38.
 - of total nutrients, (39) 336.
 - on alfalfa stubble, (33) 828.
 - yields, (28) 533; (29) 425; (40) 734.
 - yields in Germany, (26) 43.
- Sugar—
- bibliography, (29) 719; (31) 334.
 - biochemical detection, (29) 509.
 - borer, notes, (31) 851.
 - bromocetyl, preparation, (36) 313.
 - cake for cows, (30) 375.
 - cake for pigs, (30) 373.
- Sugar cane—
- ammonium sulphate for, (40) 533.
 - analyses, (29) 362; (31) 37, 336; (37) 826.
 - anatomical structure, (31) 834.
 - aphids affecting, (33) 452.
 - assimilation process, (39) 332.
 - bacterial disease, description, (31) 745.
 - bark beetles affecting, (30) 660.
 - basal from, (29) 118.
 - beetle—
 - gray-back, remedies, (36) 658.
 - life history and remedies, (38) 263.
 - notes, (34) 757.
 - occurrence in Mauritius, (27) 259.
 - borer—
 - as affected by Roentgen rays, (28) 57.
 - control by parasites, (37) 569.
 - effect on composition of sugar cane, (37) 255.
 - egg parasite of, (30) 256.
 - new, in Fiji, (33) 256.
 - notes, (26) 60; (27) 659; (29) 52; (32) 449; (33) 453; (34) 556, 753, 758; (39) 265, 765, 868; (40) 453.
 - parasites of, (40) 554.
 - pink, notes, (33) 554.
 - relation to rainfall and trash, (34) 552.
 - resistant variety, (40) 848.
 - studies, (30) 854.
 - tachinid parasite, introduction into Hawaii, (33) 256.
 - botany of, (40) 532.
 - breeding, (36) 737.
 - breeding and selection, (33) 136.
 - breeding experiments, (26) 235; (33) 435; (37) 236; (38) 526; (39) 33, 237; (40) 241, 242, 633, 634.
 - bud development in, (33) 435.
 - bud moth, studies, (33) 560.
 - buying by test, (31) 233.
 - by-products, utilization, (36) 835.
 - changes during ripening, (36) 234.
 - changes in after cutting, (38) 637.
 - chlorosis, notes, (31) 644; (39) 849; (40) 51.
 - chlorosis, studies, (33) 510.
 - classification, (30) 439.
 - coloring matter of, (35) 312.

Sugar cane—Continued.

- cost of production, (29) 690.
- covering experiments, (33) 636.
- critical period of growing season, (39) 811.
- culture, (29) 833; (30) 356; (33) 136; (39) 834.
- culture—
 - and implements in Hawaii, (31) 688.
 - experiments, (26) 233, 733; (27) 336, 435, 638; (28) 231, 532; (29) 37, 224, 739; (30) 229, 234, 340, 434, 525, 632; (31) 226, 628, 732, 733, 737, 829; (32) 336, 526; (33) 31, 32, 136, 227, 532; (34) 431; (35) 230; (36) 332, 737; (37) 237, 339, 421, 540, 734, 824, 825; (38) 230, 336, 337, 433, 526, 527; (39) 229, 230, 632; (40) 38, 230, 231, 332, 434, 441, 523, 625, 634, 825.
 - fallowing in, (37) 443.
 - for Bombay market, (32) 41.
 - for sirup, (36) 835.
 - in Cuba, (30) 340; (40) 337.
 - Dutch East Indies, (30) 697.
 - Gurdaspur District, India, (40) 635.
 - Hawaii, (37) 444; (38) 537; (39) 839.
 - India, (28) 736; (32) 131; (34) 227; (37) 139; (38) 136.
 - Louisiana, (31) 137.
 - Mexico, (32) 231.
 - Porto Rico, (29) 95.
 - Queensland, (40) 37.
 - Rhodesia, (27) 637.
 - South Africa, (30) 639.
 - southern Spain, (31) 737.
 - Tucumán, (37) 134, 139.
- relation to fungus diseases, (30) 150.
- cut, deterioration, (30) 340.
- cuttings, handling and planting, (35) 231.
- destruction by rats, (26) 857.
- deterioration, (33) 121.
- determination of ripeness, (32) 41.
- disease, new, in Porto Rico, (38) 150, 852.
- diseases—
 - and pests in Philippines, (38) 550.
 - descriptions, (29) 347.
- in Barbados, (36) 541.
- Brazil, (32) 238.
- British Guiana, (36) 846.
- Hawaii, (27) 545; (38) 549; (40) 51.
- India, (33) 846.
- Mauritius, (32) 442; (33) 444; (37) 551.
- Porto Rico, (35) 749; (37) 246; (38) 851.
- Sao Paulo, (37) 553.
- St. Croix, (32) 643.
- tropical and subtropical America, (40) 157.
- West Indies, (37) 452.
- notes, (26) 51, 143, 146; (28) 241, 443, 535; (29) 45, 345, 446, 647, 751, 833; (30) 540, 650, 845; (31) 452, 539, 641, 746; (34) 49, 349, 539, 841, 843; (38) 352; (39) 53; (40) 47, 48, 51, 155, 844, 848.
- quarantine in United States, (36) 245.
- treatment, (27) 448; (30) 150.
- drainage experiments, (40) 441.
- drought resistance and stomata relationship, (30) 628.
- dry disease—
 - and ring spot, notes, (37) 838.
 - description, (33) 852.
 - notes, (34) 442.
- effect of arrowing on production, (26) 537.
- evolution and origin, (40) 829.
- eye-spot, notes, (40) 854.
- fermented, notes, (28) 614.
- fertilizer experiments, (26) 631, 836, 837; (27) 637, 638, 643; (28) 827; (29) 37, 736, 739, 830; (30) 39, 140, 229, 234, 340, 341, 439, 525, 530, 622, 638, 822, 835; (31) 133, 524, 628, 731, 733, 737, 829; (32) 336, 436, 831; (33) 336, 517, 532; (34) 431, 831, 832; (35) 134, 336, 443; (36) 323, 332, 637; (37) 123, 215, 237, 339, 426, 529, 824; (38) 135, 220, 229, 337, 433, 437, 516; (39) 33, 230, 427, 741, 742; (40) 38, 230, 231, 241, 242, 441, 523, 532, 625, 633, 825.
- field experiments, experimental error in, (34) 38.
- fields, barren spots in, (31) 819.
- fire-damaged, analyses of juice, (39) 538.
- flowering in, (39) 237.
- fodder, composition, (28) 873.
- food value, (29) 460.
- froghopper, *see* *Tomaspsis* spp.

Sugar cane—Continued.

- frost protection and frost damage, (40) 442.
- frosted, preventing decomposition, (40) 634.
- fungoid parasites of, (26) 748.
- fungus diseases of, (26) 445.
- grasshopper, notes, (26) 59.
- green manuring, (37) 734; (38) 220.
- growing for sirup, (40) 830.
- growth, (34) 627.
- growth—
 - as affected by soils, (29) 416
 - data, (36) 233.
 - measurements, (40) 257
 - on calcareous soils, (31) 527, 816.
- grubs of Australia, (35) 57; (39) 564.
- gum disease, notes, (28) 746.
- gummosis, studies, (33) 851; (39) 551.
- history in Philippines, (36) 533.
- hybridization, (26) 439; (30) 835.
- iliac, studies, (28) 53.
- improvement, (28) 736; (29) 536; (30) 234.
- improvement in Guadeloupe, (39) 99.
- incrusting coloring matter, (27) 813.
- Indian, classification, (40) 635, 829, 830.
- Indian, studies, (33) 835.
- industry in Brazil, (29) 833.
- inheritance in, (40) 241.
- insects—
 - affecting, (26) 60, 857; (27) 453, 554, 657, 857; (28) 249, 535; (29) 52, 53, 353, 833, 858; (30) 249, 355, 356; (31) 452, 548; (32) 56, 449; (33) 253; (34) 349, 539, 753; (35) 55; (36) 654, 853; (37) 255; (38) 459; (39) 463, 556, 742, 862; (40) 57, 854.
 - dissemination, (28) 555.
 - egg parasites of, (32) 348.
 - parasites of, (27) 554; (28) 746.
 - quarantine in Porto Rico, (39) 58.
- irrigation experiments, (35) 336; (36) 737; (37) 824; (40) 230.
- irrigation in Mauritius, (35) 580.
- Japanese—
 - analyses, (34) 831; (35) 898.
 - as forage crop, (28) 735.
 - culture, (32) 226.
 - culture and use, (34) 831.
 - culture experiments, (37) 132, 140, 329, 529, 532; (38) 827, 829; (40) 729.
 - culture in eastern Oregon, (38) 432.
 - culture in Hawaii, (32) 729.
 - culture in Philippines, (26) 361; (40) 231.
 - fertilizer experiments, (33) 32; (34) 831; (35) 830; (37) 635; (39) 32, 434.
 - for steers, (37) 572.
 - seeding experiments, (37) 533.
 - silage from, (37) 683.
 - yields, (35) 528.
- Java varieties in Tucumán, (40) 441.
- juice—
 - clarification, (31) 117; (40) 510.
 - coloring matter of, (36) 114.
 - damage by moth stalk-borer, (27) 659.
 - injurious nitrogen in, (30) 15.
 - role of oxidases and iron in color changes, (40) 12.
- Lahaina disease, studies, (38) 549, 550.
- leaf roller, notes, (26) 758.
- leaf spot, studies, (40) 848.
- leaf-hoppers—
 - in Hawaii, (40) 854.
 - notes, (34) 753.
 - studies, (38) 462.
- lightning injury, (38) 250.
- lime-magnesia requirements, (29) 520.
- liming experiments, (39) 34; (40) 38.
- lodging and its prevention, (37) 444, 444.
- mealy bug—
 - as affected by Roentgen rays, (28) 57.
 - notes, (29) 854.
- methods of analysis, (31) 806.
- milling, (27) 412.
- mineral and nitrogen composition, (29) 336.
- morphology, (37) 443.
- moth borers affecting, (38) 465.
- moth stalk borer, notes, (33) 453.
- motting disease, resistant variety, (40) 848.
- motting disease, studies, (39) 53.
- mutation in, (40) 634.
- nematode injury, (40) 157.
- notes, (26) 362.

Sugar cane—Continued.

- oxidases of, (40) 426.
- payment for, (31) 530.
- pest, new, notes, (30) 157.
- pests in British Guiana, (29) 756.
- pests, remedies, (29) 846.
- pineapple disease, notes, (38) 350.
- planting—
 - dates in Argentina, (40) 441.
 - experiments, (26) 837; (29) 228; (40) 38, 532, 634, 635.
 - experiments with tops, (39) 839.
- potash and sugar content, relationship, (26) 115.
- production in Louisiana, (31) 391.
- production in St. Vincent, (39) 835.
- products—
 - bacteriology, (32) 22.
 - harmful effects, (33) 65.
 - methods of analysis, (26) 505; (28) 612.
 - polarization, (27) 508.
 - relation to pellagra, (34) 258.
- propagation by seed, (39) 237.
- ratoonings experiments, (40) 38.
- red rot fungus—
 - notes, (28) 545.
 - on juar, (36) 449.
 - studies, (29) 347.
- red rot—
 - notes, (30) 649; (31) 841.
 - studies, (26) 548; (27) 48.
 - treatment, (38) 647.
- rind disease—
 - notes, (27) 849.
 - studies, (36) 648.
- root borer—
 - bird enemies of, (34) 849.
 - remedies, (26) 552.
- root-boring weevils of West Indies, (33) 360.
- root disease—
 - in Porto Rico, (40) 848.
 - notes, (28) 545; (35) 653; (37) 753; (39) 756.
 - studies, (27) 749; (28) 649; (34) 50.
- root fungus, notes, (26) 553.
- root grubs, parasites of, (34) 455.
- root system and ratoon crops, (39) 641.
- roots, action of arsenates on, (38) 238.
- roots, beetles affecting, (28) 752.
- rotation experiments, (37) 237.
- sampling, (29) 12.
- sampling, experimental error in, (31) 117.
- scale, notes, (33) 155.
- scarabid beetles affecting, (36) 658, 753.
- sclerotal diseases, notes, (38) 351.
- seed—
 - chemistry, (28) 108.
 - from different sources, (40) 37.
 - planting experiments, (31) 737.
 - selection and treatment, (30) 449.
 - shipment of, (31) 530.
- seeding experiments, (37) 139, 824.
- seedling v. Bourbon, (30) 530.
- seedlings, studies, (36) 737.
- selection experiments, (31) 42; (38) 433; (40) 523.
- selfing and crossing, (39) 237.
- sereh disease—
 - in West Indies, (28) 151.
 - notes, (26) 54; (30) 49; (34) 52; (39) 551.
 - treatment, (27) 152.
- sexual reproduction, (26) 438.
- smut, notes, (26) 848.
- smut, treatment, (38) 647.
- soils of Hawaii, (36) 813.
- soils, unproductiveness in, (33) 516.
- stem disease, notes, (35) 49.
- stem rot or Hawaiian iliau in Louisiana, (29) 846.
- stem rot, resistant variety, (40) 848.
- stomata, physiology, (35) 330.
- stomatal structure, (33) 136; (34) 628.
- stripping experiment, (33) 136.
- subsoiling tests, (26) 631.
- sucrose content, determining at early stage, (39) 237.
- thick v. thin, for planting, (40) 532.
- thinning experiments, (31) 42, 530; (37) 139.
- top rot, notes, (34) 628.
- tops for planting, (33) 136.
- transpiration in, (35) 331; (39) 331.
- trash compost, nitrogen content, (39) 523.
- unloading and conveying machinery, (37) 90.

Sugar cane—Continued.

- varieties, (26) 436, 631, 637, 836, 837; (27) 638, 643; (28) 736, 827; (29) 37, 739, 830; (30) 234, 340, 341, 434, 439, 525, 530, 835; (31) 133, 336, 524, 628, 732, 733, 829; (32) 336, 436, 831; (33) 130, 227; (34) 431; (35) 134, 231, 336, 443; (36) 332, 533, 637, 737; (37) 139, 236, 339, 529, 824, 825, 826; (38) 135, 136, 229, 230, 336, 337, 433, 437, 537; (39) 34; (40) 38, 532.
 - varieties—
 - identification, (39) 443, 642.
 - in Dutch East Indies, (27) 443; (40) 37, 635.
 - Hawaii, (40) 634.
 - India, (40) 635, 829, 830.
 - Java, (37) 139.
 - Philippine, (40) 229.
 - variety, disease-resistant, (40) 848.
 - variety tests, (39) 230, 437, 641, 741, 742, 839; (40) 37, 228, 230, 231, 242, 332, 441, 523, 625, 633, 634, 823, 825.
 - water requirements, (31) 383.
 - water requirements in India, (27) 429.
 - wax from, (26) 213; (39) 712.
 - weevil root borer, studies, (33) 458.
 - West Indian, analyses, (27) 339.
 - white grubs affecting, (33) 750; (38) 161, 767.
 - wireworm, investigations, (38) 163.
 - yellow stripe and sereh, notes, (36) 847.
- Sugar—
- carbonitization process, (39) 16.
 - chemistry, progress in, (28) 413.
 - chips, analyses, (26) 770.
 - cold storage experiments, (37) 510.
 - composition and use, (29) 459.
 - compounds, rotatory powers, (36) 12.
 - content of—
 - blood, treatise, (31) 277.
 - cornstalks, (27) 314; (30) 14.
 - flaxseed and linseed cake, (32) 802.
 - sorghum, studies, (40) 325.
 - watermelons, (27) 765.
 - cost of production, (28) 294; (39) 443.
 - date-palm, industry in Bengal, (29) 149.
 - decolorizing carbons, new, (40) 12, 510.
 - decomposition—
 - by the cell, (30) 201.
 - in soils, (37) 628.
 - the animal organism, (26) 307.
 - the living cell, (32) 201.
 - defecation precipitate, reducing substances in, (37) 13.
 - denatured, for honeybees, (37) 467.
 - deterioration, (35) 316.
 - determination, (26) 115, 312; (27) 12, 507, 714; (35) 416; (37) 313, 509; (39) 509, 510.
 - determination—
 - biological method, (31) 809.
 - in bagasse, (27) 210; (31) 18.
 - baked articles, (38) 11, 412.
 - beets, (28) 511.
 - condensed milk, (36) 508.
 - feeding stuffs, (37) 208.
 - food products, (31) 18; (34) 205.
 - fruit juices, (28) 639.
 - hay and turnips, (31) 807; (37) 618.
 - juices, (29) 413.
 - meat, (29) 798.
 - meat products, (36) 506.
 - milk, (28) 208; (39) 805.
 - molasses, (33) 207.
 - plant juices, (38) 507.
 - plant material, (32) 113.
 - potatoes, (29) 412.
 - presence of peptone, (29) 716.
 - sugar beets, (26) 409; (29) 113.
 - sweetmeats and sirups, (28) 510.
 - urine, (34) 807; (38) 614; (39) 112; (40) 413.
 - wheat, (28) 836.
 - of raffinose in, (40) 313.
 - development in beets, (31) 737.
 - digest of literature, (27) 615.
 - effect on—
 - ammonia accumulation by microorganisms, (37) 812.
 - ammonification, (28) 718.
 - bacterial content of ice cream, (32) 660.
 - determination of pentoses in plant extracts, (33) 712.
 - digestion, (29) 663.
 - dogs, (28) 462.

Sugar—Continued.

- effect on—continued.
 - metabolism, (27) 871.
 - nitrification in soils, (28) 218; (31) 819.
 - effect on nitrogen—
 - assimilation in plants, (26) 319.
 - fixation, (28) 816.
 - fixation and nitrate loss in soil, (40) 122.
 - transformation in soils, (30) 717.
 - effect on—
 - oxidation of sulphur in soils, (30) 222.
 - plants, (35) 633.
 - productivity of soils, (28) 623.
 - secretions, (31) 762.
 - soils, (27) 722.
 - toxicity of nitrates, (30) 227.
 - evaporating machinery, studies, (30) 890.
 - experiment station at Prague, report, (28) 414
 - experiment stations in Java, work of, (31) 530.
 - extraction from beets, (28) 413; (31) 18.
 - factories—
 - cooperative in Holland, (27) 487.
 - germicides for, (32) 717.
 - heat balance of, (30) 891.
 - power and steam consumption, (36) 388.
 - factory juice heaters, tests, (36) 387.
 - factory wastes, fertilizing value, (29) 129.
 - feeds, analyses, (29) 467.
 - fertilizing value, (28) 123.
 - filtration of sirups in relation to purity, (39) 206.
 - food value, (29) 65, 459; (32) 662.
 - for children, (34) 164.
 - horses, (34) 769.
 - infants, (34) 258.
 - pigs, (33) 571
- formation—
- and translocation in mangels, (36) 125.
 - as affected by removal of flowers, (28) 225.
 - in plant organs, (39) 732.
 - potato leaves, (36) 126.
 - potatoes, (33) 310.
 - stalks of corn and sorghum, (29) 409.
 - sugar beets, (33) 235.
 - sweet potatoes, (27) 435.
- forms of in fruits, (29) 40, 503.
- from coconut palm sap, (30) 16.
- cornstalks, (34) 113.
 - millet, (32) 117.
 - sweet sorghums of India, (32) 136.
- hexose, in normal milk, (33) 311.
- humification, (31) 120.
- humus, preparation, (36) 625.
- humus, relation to soil "sickness," (28) 520.
- hydrolysis, investigations, (30) 411.
- in arrowhead tubers, studies, (30) 502.
- floral leaves, (37) 246.
 - potatoes, (29) 219; (33) 223.
 - resting potato tubers, (35) 634.
 - sweet potatoes, nature, (33) 564.
- industry—
- chemistry of, treatise, (33) 615.
 - in Australia, (40) 524.
 - Cuba, (40) 792.
 - Grenada, (39) 738.
 - Guiana, (31) 391.
 - Gurdaspur District, India, (40) 635.
 - Hawaii, (31) 391.
 - island of Negros, (26) 537.
 - Louisiana, (29) 690.
 - Mexico, (32) 231.
 - Natal, (29) 739.
 - Philippines, (28) 535.
 - Queensland, (31) 737; (40) 37.
 - United States, (30) 736, 737, 791.
- monograph, (28) 637.
- injections, effect on heat regulation, (32) 859.
- inversion—
- and determination, (38) 507.
 - and fermentation in flour, (34) 660.
 - by acids, action of neutral salts on, (40) 802.
 - by colloidal silica, (40) 201.
 - by soils and allied substances, (40) 123.
 - of, (34) 13.
- invert—
- action of acids on, (37) 802.
 - detection, (31) 18.
 - determination, (32) 22.
 - determination in presence of saccharose, (33) 207.
 - determination in presence of sucrose, (35) 504.

Sugar—Continued.

- invert—continued.
 - formation in beets during storage, (30) 15.
 - in bananas dried at different temperatures, (35) 633.
 - in malt sprouts, (26) 24.
 - manufacture, (40) 802.
 - notes, (27) 812.
 - use in bread making, (33) 461.
 - juice, evaporation, (28) 893.
 - kelp carbon for decolorizing, (40) 12.
 - localization in fleshy fruits, (35) 226; (36) 110.
 - locating in plant tissues, (34) 729; (39) 27.
 - making, mycology of, (26) 355.
 - mangels, analyses, (26) 132.
 - mangels, production and use, (26) 132.
 - manufacture, (29) 833.
 - manufacture—
 - from corn, (28) 810.
 - from cornstalks, (28) 314; (31) 409.
 - from wood, (28) 571; (30) 711.
 - handbook, (27) 413; (38) 508.
 - in United Provinces, India, (40) 208.
 - sirup precipitate in, (36) 415.
 - technical accounting and chemical control in, (30) 14.
 - treatise, (26) 439; (29) 113, 312; (34) 508; (37) 114.
 - use of decolorizing carbons in, (39) 113.
 - maple—*see also* Maple sugar.
 - borer, notes, (26) 147.
 - distribution and management, (28) 344.
 - leaves, plant food constituents, (37) 629.
 - sap, composition, (34) 428.
 - volume tables, frustum form factor, (37) 651.
 - wounds, larvae in, (29) 357.
 - massecuite—
 - and sirup, frothy fermentation, (40) 615.
 - purity tables, (40) 116.
 - treatment, (40) 510.
 - metabolism, rapidity of, (35) 764.
 - metabolism, studies, (39) 874.
 - methods of analysis, (27) 411; (32) 109; (33) 258 (35) 114; (36) 716; (38) 803.
 - minimum in nutrition, (40) 563.
 - occurrence of levan in, (28) 504.
 - of birds' eggs, investigations, (28) 65.
 - of different sorts in human nutrition, (31) 762.
 - other than sucrose, distribution in food materials, (39) 68.
- palm—
- culture and use, (32) 46.
 - East Indian, (40) 44.
 - sap, studies, (30) 16.
- pentose, in plants, (39) 224.
- plantations in Queensland, white labor for, (29) 896.
- polarization, temperature corrections in, (26) 99.
- powdered, grades of, (31) 164.
- prices in India, (30) 896.
- production—
 - and consumption, (28) 335.
 - chemistry of, (26) 115.
 - economic factors in, (30) 16.
 - handbook, (29) 233.
 - in South Africa, (38) 494.
 - in various countries, (36) 737.
 - 1918 program, (38) 836.
 - treatise, (39) 538.
- products—
 - adulteration, (30) 258.
 - determination of solids in, (27) 497.
 - methods of analysis, (32) 109; (38) 315.
- purification, carbon filters for, (40) 511.
- raw, deterioration, (38) 805.
- raw, from various countries, composition, (40) 208.
- raw, raffinose in, (26) 115, 116.
- raw, valuation, (39) 808.
- reducing—
 - and nonreducing, in mangels, (29) 111.
 - destruction in cane products, (35) 716.
 - determination, (30) 315; (34) 13, 611; (35) 206, 416; (36) 614; (37) 13.
 - determination in cane products, (35) 616.
 - determination in presence of peptones, (29) 613.
 - determination in vinegar, (29) 798.
 - Fehling's test, (39) 14.
 - in beets, (32) 110; (36) 731.

- Sugar—Continued.
 reducing—continued.
 power, (30) 111.
 variations of in leaves, (29) 827.
 refined, action on Fehling's solution, (32) 22.
 refinery sewage, purification, (33) 785; (34) 591.
 refinery sludge, analyses and fertilizing value, (34) 520.
 refining, (40) 208.
 refuse, fertilizing value, (26) 631.
 region, meteorological service, (39) 718.
 relation to anthocyanin in flowers, (31) 427; (33) 427.
 relation to polyneuritis, (29) 460.
 residues as source of potash, (34) 328.
 resorption in small intestine, (29) 268.
 resorption in the cell organism, (31) 361.
 rôle in nutrition, (32) 362.
 rôle in preserved foods, (28) 361.
 seeding method of graining, (40) 208.
 situation, treatise, (40) 533.
 solutions—
 calculating purity, (38) 616.
 filtering rack for, (39) 505.
 impure, electrical conductivity, (27) 114.
 station, Java, report, (26) 610.
 statistics in United States, (33) 894.
 storage, (39) 510.
 substitutes—
 for, (38) 662.
 in ice cream, (39) 183, 872; (40) 777, 802.
 in jelly making, (40) 558.
 recipes, (40) 361.
 use, (39) 571, 769; (40) 67, 68, 864.
 sulphitation process, (39) 509.
 supply of United States, (31) 391; (38) 806; (39) 443.
 supply of world, (38) 595.
 synthesis by radium emanations, (32) 328.
 technology, treatise, (35) 807.
 transformation in the human organism, (26) 13.
 treatise, (31) 804.
 unfermentable, formation in wine, (31) 316.
 unfermentable, of molasses, (39) 207.
 use in bread making, (32) 761; (33) 162.
 utilization by green plants, (29) 423; (32) 8.3; (36) 125.
 variation in corn cockle seeds, (28) 525.
 vinegar, notes, (30) 668.
 warehousing and storing, (38) 392.
 waste in baking, (34) 660.
 Sugarhouse apparatus, tests, (32) 282.
 Sugarhouse control, (29) 413.
 Sugars—*see also* Glucose, Sucrose, *etc.*
 absorption in the intestines, (28) 763.
 aldehyde, determination, (40) 114.
 autooxidation, (40) 113.
 determination in silage, (40) 413.
 nomenclature, (26) 505.
 nonfermentable, of molasses, (40) 313.
 preparation from other sugars of fewer carbon atoms, (40) 110.
 reducing, determination, (28) 111, 205; (40) 114, 312, 613.
 reducing, unification of methods, (26) 312; (27) 114.
 toxicity, (28) 661.
 translocation from green leaves, (26) 229.
 Sugi—
 fertilizer experiments, (38) 624.
 leaves, essential oil of, (34) 802.
 seedlings, red plague of, (35) 354.
 Suints, analyses, (26) 727.
 Sukla grass, analyses, (28) 768.
 Sulfabion, fungicidal value, (26) 345.
 Sulfocide, tests, (28) 48; (29) 146; (35) 549.
 Sulfocation—
 in relation to nitrogen transformations, (39) 823.
 in soils, (31) 318; (34) 19; (36) 22; (37) 119.
 Sulla—
 culture experiments, (30) 632.
 diseases, notes, (31) 841.
 insects affecting, (26) 147.
 nitrates in, (36) 329.
 notes, (26) 362.
 seed, germination energy of, (29) 538.
 seed, tests, (26) 133.
 Spanish, as forage crop, (32) 41.
 varieties, (30) 434.
 Sulphate of ammonia, *see* Ammonium sulphate.
 Sulphate of iron, *see* Iron sulphate.
 Sulphate of potash, *see* Potassium sulphate.
 Sulphates—
 determination, (32) 714; (40) 113
 determination in—
 bread, (34) 205.
 soils, (34) 10; (39) 12.
 urine, (35) 13.
 water, (31) 502.
 effect on—
 growth of red clover, (34) 625.
 metabolism and excretion, (26) 69.
 nitrication in soils, (26) 817.
 nodule production, (32) 727; (33) 134.
 soil bacteria, (33) 515.
 fertilizing value, (35) 220.
 flocculating power on clay, (27) 620.
 in rain and snow, (38) 416; (40) 19.
 inorganic, rôle in nutrition, (40) 71.
 loss from soils, (35) 813.
 reduction in plant cells, (28) 428.
 Sulphid solutions, alkaline, fungicidal value, (37) 47.
 Sulphids—
 effect on cement, (38) 691.
 effect on metabolism and excretion, (26) 69.
 insecticidal value, (34) 61; (35) 838.
 Sulphion, volumetric estimation, (40) 409.
 Sulphite—
 cellulose liquors, utilization, (28) 222; (29) 129.
 cellulose lye waste as cattle feed, (33) 70.
 in wool, (28) 311.
 liquor waste, utilization, (35) 14.
 Sulphites—
 determination, (37) 205.
 effect on metabolism and excretion, (26) 69.
 fertilizing value, (29) 521.
 Sulphocyanic compounds, assimilation by mold fungi, (29) 29.
 Sulphocyanid, in ammonium sulphate, (34) 422.
 Sulphocyanogen, origin in milk, (26) 477.
 Sulphone-phthalcins, preparation, (36) 111.
 Sulphonphthalcin series of indicators, (36) 711.
 Sulphur—
 action in soils, (23) 820.
 analyses, (27) 441.
 and phosphate ccomposts, studies, (39) 118, 624, 821.
 and potassium hydroxid, reaction between, (31) 409.
 and sulphates, fertilizing value, (39) 729.
 arsenical dusts, use against strawberry weevil, (37) 466.
 as fertilizer for grapes, (30) 822.
 as fertilizer for rice, (29) 232.
 as soil disinfectant, (31) 621.
 atomic—
 analyses, (31) 142.
 fungicidal value, (34) 146.
 tests, (29) 146.
 bacteria—
 physiology, (28) 728.
 physiology and distribution, (33) 23.
 purple, physiology of, (31) 32.
 compound, soluble, analyses, (34) 436.
 compounds—
 effect on metabolism and excretion, (26) 69.
 fertilizing value, (34) 221.
 injury to grapevines, (38) 853.
 of soils, (32) 718.
 conservation in soils, (38) 327.
 content of Kentucky soils, (30) 20.
 content of soils, (31) 720.
 copper sulphate mixture, testing, (26) 854.
 detection in inorganic and organic compounds, (26) 109.
 determination, (26) 511; (31) 109.
 determination—
 as barium sulphate, (35) 613.
 in lime-sulphur solutions, (36) 16.
 plant material and soils, (37) 614.
 plants, (29) 797; (31) 817.
 rice, (29) 231; (31) 110.
 soils, (28) 123.
 urine, (33) 415; (35) 13.
 wine, (35) 617.
 of fineness, (31) 15.
 dioxid—
 determination, (37) 205; (38) 10.
 determination in dried fruits, (32) 206.

Sulphur—Continued.

- dioxid—continued.
 effect on animals, (35) 133.
 effect on plants, (35) 28, 133, 243, 636.
 effect on vegetation, (34) 526.
 effect on wine diseases, (35) 617.
 effect on yeasts and bacteria in wine and juices, (35) 611.
 fumes, disappearance from the air, (35) 133.
 in atmosphere of Selby smoke zone, (34) 716.
 injury to plants, (34) 745.
 injury to trees, (31) 146.
 insecticidal value, (38) 458.
 leaf injury or loss due to, (35) 243.
 sterilization of soils by, (32) 816.
 use against insects, (36) 456.
 dips, methods of analysis, (40) 208.
 dust, fungicidal value, (34) 146; (39) 548.
 dusting v. spraying with, (31) 449.
 effect on—
 alfalfa, (37) 33.
Aspergillus fumigatus, (29) 30.
 availability of mineral phosphates, (36) 26.
 availability of rock phosphate, (39) 118.
 bacterial activity of soils, (31) 125.
 crops and soils, (38) 221.
 fermentation of manure, (38) 19.
 growth of red clover, (34) 625.
 growth of sugar beets, (30) 834.
 growth of tubercle bacilli, (29) 381.
 hops, (29) 13.
 nitrification in soils, (31) 818.
 plant growth, (31) 623, 817; (34) 331, 726.
 plants, (27) 27.
 potato scab, (32) 750.
 rock phosphate, (40) 128.
 soil acidity, (31) 727.
 soil bacteria, (30) 532.
 soil fungi, (27) 728.
 sugar beets, (34) 38.
 wool production, (28) 872.
 fertilizing action, (26) 819.
 fertilizing value, (27) 128, 326, 422, 628, 629; (28) 726, 740, 815; (29) 25, 26, 215, 319, 521; (30) 138, 139, 435, 532, 627, 822, 834; (31) 31, 218, 220, 424, 442, 530, 623; (32) 724; (33) 841; (34) 540; (35) 529, 728; (38) 726; (39) 622, 749; (40) 128, 440.
 finely ground, fungicidal value, (30) 840.
 for grapes, (31) 442.
 free, determination, (27) 206.
 fumes, effect on plant growth, (33) 127.
 fungicidal value, (33) 648.
 fungicides, preparation and use, (35) 646; (36) 16.
 fungicides, source and use, (36) 455.
 importance in animal nutrition, (31) 663.
 in Iowa soils, (34) 27.
 metabolism of *Aspergillus niger*, (30) 727.
 moor soils, destructive action, (36) 424.
 plant nutrition, (31) 817.
 soils and atmospheric precipitation, (30) 422.
 soils, solubility, (39) 821.
 insecticidal value, (27) 755; (39) 762.
 international movement, (34) 426.
 isolation from soils, (28) 418.
 judging, (31) 15.
 liberation from lime-sulphur, (31) 408.
 linkages in proteins, (26) 306.
 liver of, emulsion for, (37) 760.
 liver of, purchase and use, (31) 846.
 loss in drainage water, (35) 623.
 loss in soils, (37) 119.
 mechanism and fertilizing action, (27) 726.
 metabolism in dogs, (38) 570.
 metabolism of, (35) 863.
 methods of analysis, (26) 315; (31) 806.
 nutrition of plants, (40) 726.
 oxidation by nitric acid, (27) 245.
 oxidation in soils, (30) 222; (36) 821.
 paste as spray for peaches, (36) 351.
 paste, fungicidal value, (34) 146.
 powdered, as fungicide, (38) 848.
 powdered, for gooseberry mildew, (32) 645.
 powders, testing, (26) 854.
 production—
 and use in 1913, (32) 425.
 and use in 1913-1915, (35) 631.
 in 1915-16, (37) 524.

Sulphur—Continued.

- relation to—
 nitrogen in metabolism, (26) 765.
 soil fertility, (32) 724; (34) 27.
 soils and crops, (35) 220; (36) 396.
 removal from soil, (39) 517.
 requirement of crops, (26) 726.
 requirement of red clover, (40) 727.
 soluble and atomic, fungicidal value, (37) 448.
 soluble, as summer spray for apples, (33) 46, 47.
 spray injury, prevention, (34) 154.
 sprays—
 fruit spotting from, (39) 856.
 materials used in, (35) 342.
 preparation and use, (40) 59.
 sterilization of soils by, (32) 816.
 thiosulphate, determination in lime-sulphur solutions, (36) 318.
 transformation in soils, (33) 815.
 trioxid of feeding stuffs, digestibility, (40) 770.
 use against oak mildew, (31) 845.
 use against potato scab, (29) 646; (30) 139; (32) 146; (33) 246; (36) 848; (39) 755.
 Sulphured—
 food products, arsenic in, (39) 206.
 grain, detection, (28) 807.
 Sulphuric acid—
 assay, (28) 661.
 content of snow and rain, (40) 314.
 creamery-waste, acid phosphate from, (40) 16.
 destruction of stumps by, (28) 485; (31) 92.
 destruction of weeds by, (31) 532; (36) 236.
 detecting arsenic in, (39) 113.
 determination, (26) 205; (32) 714.
 determination in—
 foods, (29) 809.
 presence of alkali metals, (26) 109.
 presence of phosphates, (40) 13.
 soils, (27) 805.
 displacement by water in leaves, (29) 219.
 effect on—
 bread fermentation, (27) 268.
 germination of *lespedeza* seed, (35) 441.
 germination of seeds, (27) 132, 524; (29) 628, 740.
 plants, (30) 130; (37) 224.
 rice production, (39) 537.
 soil organisms, (38) 420.
 sprouting of potatoes, (32) 829.
 wheat, (31) 34.
 fertilizing value, (29) 25; (30) 441.
 forcing plants with, (28) 837.
 hydrometer readings, (27) 328.
 industry, (36) 124.
 industry—
 in Great Britain, (40) 816.
 in United States, (29) 517.
 notes, (31) 323; (39) 222, 522, 724.
 larval value, (37) 665.
 manufacture, (34) 9; (38) 423; (40) 815.
 manufacture in United States, (27) 22.
 production and use in 1911, (29) 213.
 solution, effect on potatoes, (27) 748.
 titration, (36) 805.
 use against weeds, (30) 441; (33) 139.
 in irrigation water, (29) 330.
 in soil disinfection, (33) 250.
 on alkali soils, (25) 814.
 on rice fields, (36) 332.
 volatility in vacuum drying, (30) 505.
 waste, utilization, (29) 418.
 Sulphuric anhydrid, loss on incinerating organic substances, (33) 611.
 Sulphuring—
 effect on hops, (33) 709.
 machines, tests, (29) 347.
 Sulphurous—
 acid—
 action on rock phosphate, (34) 220.
 as food preservative, (30) 364.
 effect on pollen, (27) 635.
 effect on white wines, (29) 264.
 fertilizing value, (29) 25.
 free, determination, (33) 611.
 in candies, (27) 868.
 in wine making, (28) 209; (32) 208; (34) 207; (36) 801.
 physiological action, (29) 269.
 preparation, (37) 205.
 titration, (32) 116.

- Sulphurous**—Continued.
 anhydrid, toxicity toward olive blooms, (33) 447.
- Sultanas**, drying, (37) 114.
- Sumac**—
 as source of tannin, (37) 548.
 destruction, (26) 334.
 Indian, notes, (35) 317.
 industry in America, (39) 752.
 poison, pollen of, (31) 280.
 smooth, notes, (30) 145.
- Summer**—
 grass, analyses, (27) 68.
 sore in horses, notes, (26) 482.
 sores, etiology and treatment, (40) 586.
- Summers**—
 American, classification, (34) 118.
 classification, (32) 810.
 warm and cold, (40) 716.
- Sun**—
 as for producer, (29) 721.
 Brester's theory, (38) 511.
 power plant in Egypt, (31) 688.
 power plant, notes, (30) 890.
 power plants, steam engines for, (29) 787.
 spot frequencies, (34) 117.
 spot numbers, Wolf-Wolfer system, (29) 721.
- spots**—
 effect on tree growth, (38) 415.
 magnetic storms, and rainfall, (38) 811.
 periodicity, (38) 812.
 relation to climate, (28) 211; (38) 114; (40) 416.
 relation to weather, (27) 718; (37) 619.
 temperature and radiation of, (36) 419.
- Sundri timber**, notes, (34) 240.
- Sunflower**—
 artichoke grafts, studies, (39) 645.
 cake, analyses, (26) 165, 369.
 cake, digestibility, (28) 464.
 fly, notes, (40) 169.
 pith and stems, utilization, (38) 207.
 seed, amino acid in, (33) 665.
 seed, analyses, (31) 834.
 seed cake—
 acidity, (32) 259; (35) 770.
 analyses, (29) 467; (30) 267, 268; (31) 467; (33) 170.
 effect on milk and butter, (34) 570.
 effect on milk production and quality, (26) 476.
 for cows, (29) 577.
- seed**—
 distribution of nitrogen in, (36) 269.
 meal, analyses, (30) 268; (31) 864; (33) 870.
 oil, analyses, (36) 803.
 oil, detection, (29) 613.
 Swedish, studies, (40) 533.
- seeds**—
 betains in, (27) 203.
 formation of oil in, (32) 427.
 precipitating serum from protein of, (28) 801.
- silage**—
 analyses and use, (40) 470.
 for cows, (39) 182.
 notes, (37) 230.
 studies, (40) 331.
- stems**, utilization, (40) 242.
- Sunflowers**—
 analyses, (27) 68.
 as affected by lithium salts, (28) 526.
 forage crop, (40) 242.
 silage crop, (38) 74; (40) 332, 431.
 soiling and silage crop, (40) 429.
 source of potash, (38) 207.
- culture**, (31) 834.
- culture**—
 and use, (27) 68.
 experiments, (35) 228; (37) 332, 730; (39) 437, 835; (40) 230.
 for chicken feed, (38) 827.
 for oil, (28) 434.
 for seed, (37) 230.
 on moorland, (30) 229.
 under dry farming, (30) 435.
 elongation of hypocotyl, (28) 39, 739.
 fertilizer experiments, (26) 129; (36) 626.
 for dairy cows, (38) 369.
 forcing with radium, (28) 825.
- Sunflowers**—Continued.
 forms of, (30) 140.
 germination as affected by depth of planting, (36) 438.
 germination studies, (28) 225.
 glucosid in, (32) 713.
 growth in, (33) 28.
 growth on calcareous soils, (31) 816.
 hybrid, (40) 728.
 insects affecting, (31) 548; (34) 450.
 marking factors in, (34) 341.
 phyllotaxy of, (28) 739.
 pollination by bees, (32) 556.
 red, notes, (26) 840.
 resistance to cold, (39) 525.
 root systems of, (31) 515.
 Russian, as silage crop, (39) 134.
 Russian, breeding experiments, (27) 741.
 sclerotinia diseases, (40) 49.
 specific and varietal characters in, (34) 237.
 studies, (32) 831.
 variations in, (37) 543.
 varieties, (27) 736; (31) 829; (33) 527; (37) 339.
 varieties resistant to *Orobanche cumana*, (29) 851.
 water requirement, (32) 127; (35) 823.
 yields of stover, (40) 731.
- Sunlight**—
 actinic power, (29) 212.
 and moonlight, relation, (38) 811.
 effect on—
 color of apples, (28) 145.
 composition of leaves, (35) 333.
 composition of wheat, (29) 834.
 flower color, (34) 237.
 germination of seeds, (28) 327.
 osmotic pressure of leaves, (27) 631.
 plant acids, (30) 431.
 plant assimilation, (29) 26.
 formation of nitrites by, in aqueous solution, (40) 425.
 measuring with photometer, (39) 524.
 photochemical effects from, (29) 218.
 relation to respiratory activity, (34) 30.
 synthesis by, (30) 129.
- Sunrise and temperature minimum**, difference in time, (40) 314.
- Sun's**—
 atmosphere, convection in, (35) 419.
 rays, absorption and utilization of energy from by animals, (31) 661.
 rays, distribution in forests, (30) 45.
- Sunshine**—
 effect on protein content of wheat, (30) 836.
 intensity, method for approximating, (38) 629.
 measurement, (33) 717.
 recorders, comparison, (38) 210.
- Superior Council of Agronomic Stations and Laboratories in France**, (40) 99.
- Superphosphate**—
 addition to barnyard manure, (33) 829.
 analyses, (28) 627; (39) 222.
 as affected by—
 ammonium sulphate, (28) 818.
 calcium carbonate, (26) 428; (35) 816; (36) 325.
 calcium cyanamid, (30) 26; (33) 25.
 crumbing, (30) 722.
 gaseous ammonia, (35) 519.
 ground oyster shells, (36) 821.
 liming, (39) 119.
- as preservative for liquid manure**, (31) 422.
as winter spray for fruits, (30) 641.
double, fertilizing value, (34) 35.
double, preparation, (29) 319; (33) 220.
drilling v. broadcasting, (31) 123.
- effect on**—
 asparagus roots, (28) 236.
 availability of soil potash, (32) 126.
 carnations, (36) 446.
 composition of cereals, (37) 827.
 composition of grasses, (32) 665.
 composition of prairie grass, (31) 864.
 composition of turnips, (26) 527; (29) 41.
 decomposition of green manure, (31) 7 8 4
 decomposition of soy bean fodder, (40) 21
 fermentation of manure, (38) 19.
 germination of seeds, (29) 328; (31) 729.
 germination of wheat, (27) 840.
 H-ion concentration in soils, (39) 425.

Superphosphate—Continued.
effect on—continued.

- maturity of cotton, (31) 39, 136.
- nitrification in soils, (28) 218.
- nitrogen content of soils, (36) 324; (38) 213.
- quality of sugar beets, (28) 44.
- quality of sweet potatoes, (31) 437.
- resistance of grain to hail, (30) 519.
- root system of beets, (35) 23.
- soil acidity, (35) 22; (37) 23; (38) 620.
- soil bases, (37) 126.
- sulfofying power of soils, (37) 119.
- the eye, (31) 29.
- tobacco (33) 733.
- enriched, from precipitated phosphate, (34) 330.
- fertilizing value, (26) 133, 230, 329, 330, 426, 536, 537, 538, 622, 630, 635, 639, 817, 833, 838; (27) 32, 137, 234, 325, 337, 338, 429, 434, 530, 535, 638, 736, 832, 834; (28) 431, 721, 737, 816; (29) 31, 137, 228, 319, 330, 335, 336, 418, 519, 624, 632, 635, 737, 829, 831; (30) 25, 126, 230, 437, 530, 636, 820, 821, 829, 835, 839; (31) 37, 40, 139, 530, 630, 738, 820, 823, 829; (32) 323, 518, 629, 831; (33) 519, 722, 723, 828, 834; (34) 22, 25, 330, 518, 519; (35) 22, 220, 428, 532, 535, 536, 629, 724; (36) 23, 230, 332, 425, 437, 626, 735, 738, 820, 821, 829, 833; (37) 29, 214, 228, 426, 449, 521, 534, 535, 540, 729, 731, 743, 823, 831; (38) 131, 230, 233, 325, 326, 519, 534, 619, 625, 634, 817, 825; (39) 22, 25, 32, 116, 127, 217, 220, 227, 242, 327, 335, 421, 427, 434, 435, 436, 446, 528, 529, 530, 537, 540, 623, 625, 737, 745, 818, 843; (40) 218, 242, 332, 429, 439, 515, 633, 723, 733, 828.
- for acid soils, (39) 115, 326.
- asparagus, (28) 339.
- carinations and roses, (29) 840.
- corn, (32) 732.
- cranberries, (34) 150.
- grass lands, (29) 530; (33) 527.
- Missouri soils, (33) 212, 213, 214, 215.
- moor soils, (39) 438.
- orchards, (36) 41.
- pastures, (36) 735.
- peaty pastures, (36) 425, 740.
- sweet potatoes, (33) 337.
- wheat in New South Wales, (35) 219.
- wheat in semiarid conditions, (34) 519.
- from phosphorites, (36) 122, 727.
- in mixed fertilizers, (32) 527.
- industry—
 - in Austria-Hungary, (33) 822.
 - in Great Britain, (39) 523.
 - in Russia, (26) 693.
- loss from soils, (29) 211.
- manufacture, (29) 418; (31) 725; (32) 323; (33) 126; (34) 329, 724.
- manufacture from Russian phosphorites, (27) 627.
- manufacture in Southern States, (27) 22.
- mixing with—
 - basic slag and rock phosphates, (37) 816.
 - calcium cyanamid, (29) 24; (31) 822.
 - calcium nitrate, (29) 214.
 - limestone, (34) 26.
- niter-cake, (40) 221, 515.
- of ammonia, new fertilizer, (40) 127.
- ammonia, use on calcareous soils, (32) 622.
- lime, analyses, (33) 723.
- lime, effect on marsh plants, (29) 531.
- on DeKalb soils, (39) 22.
- preparation, (37) 322; (40) 725, 801.
- preparation with—
 - creamery waste sulphuric acid, (40) 16.
 - sulphur dioxide and chlorine, (27) 521.
- prepared with synthetic nitric acid, fertilizing value, (33) 25.
- production—
 - and use in 1911, (29) 213.
 - in 1917, (39) 824.
 - on the farm, (39) 118.
- rational use, (28) 124.
- residual effects, (26) 428; (37) 23.
- reversion, (38) 122; (39) 521.
- secondary and subsidiary effects, (30) 26.
- solubility in mineral and organic acids, (38) 423.
- technology and chemistry of, (36) 726.
- use against tobacco root rot, (36) 32.
- in Hungary, (30) 222.
- in war time, (38) 723.
- on pastures, (26) 437.

Superphosphate—Continued.

- use on peat soils, (37) 135; (38) 132, 433.
- on red soils, (32) 723.
- utilization by oats and lupines, (31) 733.
- utilization in different soils, (30) 221.
- v. rock phosphate, (35) 520.
- v. rock phosphate for cotton and corn, (33) 32.
- valuation, (26) 311.
- vinasse as a fertilizer, (31) 125.
- Supple jack as *lignum vitae* substitute, (40) 640.
- Suppurative lesions in horses and calves, (34) 186.
- Suprarenal—
 - bodies, cholesterol content during muscular work, (31) 465.
- glands—
 - action in sex determination, (26) 773.
 - effect on antitoxins, (30) 479.
 - effect on growth, (28) 571.
 - of domestic animals, anatomy and histology, (28) 778.
- Suprarenin, use against milk fever, (26) 580.
- Suptol-burow, use against swine plague, (26) 88; (28) 682; (30) 586.
- Surface area and gaseous exchange, relation, (31) 562.
- Surface caterpillar, notes, (32) 58.
- Surgery—
 - experimental, studies, (31) 277.
 - papers on, (29) 676.
 - veterinary, handbook, (27) 377.
- Surra—
 - immunity to, (29) 379.
 - in camels, treatment, (32) 83, 184, 581.
 - notes, (27) 884.
 - transmission by—
 - blood-sucking insects, (26) 150.
 - insects, (28) 756; (31) 777.
 - stable flies, (29) 760.
 - Tabanus striatus*, (30) 253.
 - treatment, (29) 176, 883.
- Surveying—
 - agricultural, laboratory manual, (30) 888.
 - farm, notes, (32) 885.
 - forest, textbook, (26) 644.
- Sus serofa, notes, (27) 371.
- Susceptibility, paper on, (27) 576.
- Susza cake, analyses, (27) 570.
- Sutherlandia frutescens, culture experiments, (30) 632.
- Swallows—
 - cliff, destruction of locusts by, (28) 351.
 - food habits, (38) 856.
 - nests, edible, analyses, (30) 258.
- Swammerdamia castaneae n.sp., description, (33) 655.
- Swamp bay, analyses, (26) 612.
- Swamp fever—see also Anemia, infectious.
 - in horses, (26) 287, 881; (38) 689, 788.
 - horses, transmission, (30) 687; (32) 754; (37) 374.
 - New York, (34) 280; (36) 676.
 - United States, (37) 274.
 - studies, (31) 177; (34) 185; (35) 80.
 - transmission, (39) 162.
- Swamp—
 - lands—
 - drainage, (30) 588; (35) 286.
 - improvement, (31) 516.
 - in Bavaria, (32) 812.
 - redaimed, fodder crops on, (40) 231.
 - reclamation, (27) 890; (29) 182; (31) 516, 783; (32) 884; (34) 527; (40) 231.
 - treatise, (29) 890.
 - meadows, water table, (40) 211.
 - rose mallow, insects affecting, (40) 754.
 - soils—
 - drainpipe deposits in, (31) 721.
 - fertilizer tests on, (26) 323; (27) 32.
 - judging, (36) 117.
 - of eastern United States, (27) 618.
 - rice, gases, (30) 515; (33) 216; (36) 116; (37) 424; (39) 517.
 - shrinkage from drainage and cultivation, (30) 120.
 - sponge spicules in, (27) 622.
 - vegetation as indicator of quality, (40) 718.
 - waters, effect on plants and biocolloids, (40) 520.
- Swans, reproductive organs of, (26) 876.
- Sweat, secretion, salt content, and reaction, (26) 766.

Swede—
club root, notes, (36) 541.
diseases, notes, (32) 544.
finger-and-toe disease, treatment, (26) 630; (29) 752.
midge in Yorkshire, (34) 453.
midge, life history and remedies, (28) 355.
Phoma rot, notes, (29) 547.
roots, decomposition in soil, (40) 214.
seeds in Denmark, (37) 742.
silage, analyses, (29) 367.

Swedes—
analyses, (26) 767; (27) 469.
and turnips, crosses between, root nodules of, (33) 848.
as substitute for silage, (33) 41.
cabbage-top affecting, (28) 355.
culture, (28) 42.
culture—
experiments, (27) 33; (28) 531; (33) 632; (36) 436; (37) 228, 733; (39) 124; (40) 625, 731.
in Antigua, (40) 522.
in Rhodesia, (27) 32, 637.
in South Dakota, (40) 32.
dry matter content, (26) 436.
effect on following crop, (40) 623.
effect on milk and butter, (34) 570.
electrical stimulation, (40) 428.
factors affecting composition, (38) 432.
feeding value, (40) 768.
fertilizer experiments, (26) 231, 232, 424, 425, 436, 535, 622, 629, 631, 632, 819, 837; (27) 32, 321, 530, 532, 535, 831; (28) 533; (29) 125, 632, 833; (30) 134, 435, 530; (31) 530; (33) 326; (34) 431; (36) 738; (37) 228; (39) 435.
for horses, (32) 462.
green manuring experiments, (26) 536.
growth on sterilized soils, (31) 336.
growth on volcanic ash, (32) 36.
manurial value of tops, (39) 836.
mulching v. clean culture, (33) 534.
protein of, (37) 410.
rapelike sports, (36) 541.
rate of sowing tests, (27) 638.
relation between size of seed and yield, (26) 434.
relative yielding capacity, (40) 625.
resistance to club root, (33) 52.
rotation experiments, (29) 227.
seed production, (33) 226.
seeding experiments, (29) 432.
sulphur in, (31) 817.
susceptibility to mildew, (34) 52.
varieties, (26) 436, 630, 631, 837; (27) 32, 141, 736; (30) 134; (31) 829; (32) 528; (33) 33, 34, 631; (34) 865; (35) 637; (37) 227.
variety tests, (39) 336, 435, 634.
vitality of seed, (27) 740.
water requirements in India, (27) 429.
yield as affected by time of thinning, (29) 431.
yields, (39) 334; (40) 730, 734, 735.

Swedish—
Moor Culture Society, report, (26) 423, 817; (29) 516.
seed improvement society, history and work, (27) 437.

Sweep rake for hay harvesting, (38) 88.

Sweet clover—
analyses, (32) 171.
analyses and agricultural value, (37) 831.
as affected by calcium and magnesium, (35) 726.
cover crop, (32) 332.
green manure, (38) 721; (39) 423.
hay crop, (37) 531.
hog pasture, (39) 777; (40) 72, 75.
pasture crop, (39) 272; (40) 32, 330, 470.
silage crop, (39) 134.
soil restorer, (28) 637.
winter cover crop, (40) 133.
bacteria as affected by acidity, (39) 722.
culture, (31) 227; (32) 132, 431, 831; (33) 97; (34) 630; (35) 33; (36) 828; (37) 540.
culture—
and use, (32) 231.
experiments, (28) 735; (32) 132, 533; (35) 228, 528; (37) 140, 226, 435; (38) 334, 830.
for winter forage, (38) 735.
in Montana, (38) 136.
sand hills of Nebraska, (35) 827.
Washington, (40) 731.
Wyoming, (36) 637.

Sweet clover—Continued.
culture—continued.
under dry farming, (31) 429; (33) 632; (34) 734; (36) 529.
under irrigation, (34) 528.
digestibility, (39) 171.
effect on yield of sugar beets, (29) 137.
eradication, (37) 540.
fertilizer experiments, (26) 631.
geographical distribution, (26) 335.
hay, analyses, (33) 469.
hay, feeding value, (40) 369.
inoculation, (33) 633; (34) 528; (35) 336; (36) 197; (38) 134; (40) 215.
insects affecting, (27) 155.
liming experiments, (35) 336; (39) 221.
manual, (29) 833.
notes, (27) 37; (30) 341.
nurse crop for, (39) 336.
on alkali soil, (38) 118; (39) 135, 215.
on corn belt farms, (40) 242.
on "slick spots", (39) 229.
Sclerotium disease, experimental, (39) 753.
seed, germination, (35) 826.
seed, germination tests, (34) 630; (36) 638; (37) 540.
seed, harvesting, (38) 35.
silage, chemistry of, (40) 10.
silage, l-leucin in, (37) 802.
straw for livestock, (38) 36.
utilization, (37) 444.
varieties, (26) 631.
varieties, foreign, (39) 338.
water requirements, (29) 826; (32) 127.
white v. yellow, (39) 229, 336.
white, yields, (39) 333.
wild, notes, (33) 729.
yields, (37) 227.

Sweet corn—*see also* Corn.
borer, imported, (39) 62.
breeding experiments, (27) 528; (33) 31; (34) 144; (38) 445.
culture, (34) 41, 232.
culture experiments, (30) 828; (35) 341; (37) 742.
disease, description, (31) 745.
effect on succeeding grass crop, (33) 33.
electroculture experiments, (40) 147.
fertilizer and liming experiments, (39) 745.
fertilizer experiments, (36) 839; (37) 522, 742.
flintiness in, (27) 741.
heredity of waxy endosperm in, (29) 35; (32) 141.
mulching v. clean culture, (33) 534.
papago, investigations, (34) 232.
pollination studies, (34) 233.
preservation by freezing, (39) 344.
respiration and catalase activity, (39) 524.
Stewart's disease, studies, (40) 846.
suckering experiments, (36) 838.
sugar content as affected by detasseling, (34) 434.
treatise, (34) 41.
variation in, due to fertilizers, (29) 435.
varieties, (29) 426; (31) 331; (35) 229; (38) 334.
variety tests, (40) 134.
viability tests, (34) 145.

Sweet orange oil, production, (36) 416.

Sweet pea—
anthracnose, investigations, (26) 751; (28) 444.
bacterial disease, studies, (33) 547.
diseases, notes, (26) 47; (27) 354; (28) 750; (29) 450, 650; (37) 155.
diseases, studies, (32) 446.
growing clubs, notes, (28) 395.
mosaic disease, notes, (36) 145.
seedlings as test for hydrocarbons, (29) 132, 529.
streak diseases, notes, (27) 45; (29) 352.

Sweet peas—
as affected by pruning, (29) 339.
as an indicator of gas in soils, (34) 243.
classification, (31) 443.
culture, (37) 546.
culture, handbook, (26) 47.
culture in greenhouses, (26) 740.
cut, preservation, (31) 837.
description and culture, (37) 346.
fertilizer experiments, (26) 739.
fungus disease affecting, (26) 551.
growth as affected by potassium permanganate, (27) 621.
handbook, (26) 139; (30) 534.
hybridization experiments, (30) 329.

Sweet peas—Continued.

- large v. small seeds, (31) 634.
- mutation in, (40) 541.
- notes, (29) 299.
- red spider on, (39) 65.
- rogues in, (28) 238; (29) 239.
- studies, (28) 641; (31) 443.
- treatise, (32) 339; (34) 238; (36) 643; (37) 546.
- varieties, (34) 345.
- vitality of pollen, (29) 326.

Sweet potato—

- black rot, notes, (30) 150.
- black rot, studies, (39) 854.
- borer, *see* *Cylas formicarius* and Sweet potato weevil.
- diseases, (40) 158.

diseases—

- and pests in Cuba, (38) 537.
- distribution and prevalence, (33) 743.
- in Indiana, (32) 343.
- new or little known, (31) 447; (32) 51.
- notes, (30) 349; (35) 49; (36) 451; (39) 52, 850.
- studies, (34) 156.
- treatment, (37) 249.

dry rot, studies, (28) 548; (29) 153.

flour, starch, and sugar, making and uses, (40) 267.

foot rot, studies, (30) 351.

growers' association in North Carolina, (32) 489.

haulms, analyses and digestibility, (32) 259.

leaf folder, studies, (38) 465.

pox or pit, studies, (39) 456.

pox, relation to liming, (39) 127.

ring rot, causative agent, (26) 748.

root borer, notes, (33) 59; (37) 256; (38) 864.

root disease and white rust, (37) 452.

root weevil, notes, (38) 467, 564; (39) 461.

rots, notes, (26) 637.

rots, treatment, (28) 849.

scarabee, notes, (37) 256.

scurf, investigations, (34) 646, 747.

silage, feeding value, (39) 477, 482.

silage for cows, (37) 683; (38) 876.

skins, analyses, (38) 626.

soil rot or pox, (36) 544.

soil stain and pox, studies, (33) 347.

sphinx, notes, (31) 550.

starch, laundry test, (27) 435.

stem rot, causative agent, (29) 647.

stem rot, notes, (32) 50.

stem rot, studies, (32) 844.

storage—

house, construction, (31) 138, 436.

rots, studies, (36) 250.

rots, treatment, (31) 437.

tubers, anatomy, (36) 223.

tubers, character, (33) 27.

vine hay, analyses, (31) 437.

vines, circulation in, (30) 343.

weevil—*see also* *Cylas formicarius*.

new, (39) 565.

notes, (28) 158; (33) 554; (34) 65; (38) 864;

(39) 159; (40) 259, 260.

small, notes, (33) 563.

studies, (40) 357.

Sweet potatoes—

analyses, (27) 435; (28) 459; (32) 41; (33) 568.

as affected by chemicals, (32) 538.

as food, (36) 560.

as silage crop, (31) 732.

ash analyses, (29) 861.

carbohydrate metabolism, (39) 732.

carbohydrate transformations in, (34) 522.

changes during latter part of growth, (38) 637.

changes during storage, (32) 633.

circulation in, (27) 731; (34) 135.

critical period of growing season, (39) 811.

culture, (29) 536; (33) 636; (36) 638; (40) 738.

culture—

and storage, (31) 138; (32) 527; (37) 297.

and use, (40) 763.

experiments, (28) 231; (29) 637; (30) 229;

(31) 436, 829; (33) 31, 227; (38) 336; (40)

230, 231, 434.

in Arkansas, (35) 139.

cotton belt, (32) 740.

Cuba, (38) 537.

Philippines, (26) 361; (40) 231.

Rhodesia, (27) 32, 637.

(Texas, 3 6) 440.

treatise, (35) 232.

Sweet potatoes—Continued.

dried, beetle injurious to, (39) 565.

drying in Hawaii, (39) 208.

fertilizer experiments, (29) 637; (30) 525; (31)

437, 829; (32) 217; (33) 336; (35) 337, 736; (37)

635, 823; (39) 434; (40) 230, 515.

formation of sugar and starch in, (27) 435.

Fusaria affecting, (31) 544.

harvesting and storing, (38) 136.

harvesting time, (38) 638.

Hawaiian, analyses, (39) 208.

improvement, (28) 736.

insects affecting, (33) 153; (39) 556; (40) 259.

manual, (32) 41.

nature of sugars in, (33) 564.

notes, (26) 362; (39) 745.

production in United States, (26) 293.

Quichua names of, (35) 129.

reducing and nonreducing sugars in, (29) 503.

respiration experiments, (34) 426.

selection experiments, (33) 235.

slips v. cuttings, (39) 529.

starch content, (33) 108.

storage, (31) 436; (36) 440; (39) 127, 538, 742, 770;

(40) 864.

storage—

and marketing, (28) 535; (29) 635.

experiments, (26) 637; (35) 337.

rots, (39) 642, 854; (40) 347.

termite injury, (40) 260.

transportation regulations, (30) 346.

uses of, (28) 395.

varieties, (26) 436, 534, 733; (27) 233; (28) 828;

(29) 637; (30) 525; (31) 436, 732, 829; (32) 227;

(33) 235, 535; (34) 431; (35) 134, 337, 735; (38)

33, 335, 748.

varieties—

for Porto Rico, (40) 44.

in Cuba, (38) 537.

resistant to stem rot, (34) 444.

variety tests, (39) 519; (40) 228, 522.

Sweet tussock, production and use, (40) 442.

Sweetbreads, creatin and creatinin content, (31) 760.

Sweetmeats, manufacture, treatise, (29) 264.

Swietenia—

macrophylla, experimental plantings, (38) 749.

macrophylla, tests, (33) 536.

spp., studies, (36) 745.

Swine—*see also* Pigs.

avian tuberculosis in, (40) 185.

B. suis, suistifer in intestines, (39) 188.

bacterial infections in, (40) 783.

color inheritance in, (40) 870.

corpus luteum of pregnancy, (40) 663.

diseases, differential diagnosis, (39) 589.

erysipelas—

bacilli, action of organic body fluids on, (35)

884.

bacilli, action of salvarsan on, (39) 590.

diagnosis, (27) 86, 883.

immunization, (40) 385.

in Great Britain, (34) 382.

man, (27) 883; (39) 590.

Portugal, (36) 280.

Prussia, (27) 181.

natural immunity in, (35) 381.

fever—

control in England, (36) 275.

immunization, (33) 183.

in Great Britain, (26) 288; (36) 378.

notes, (26) 373; (37) 279.

pathology and epidemiology, (36) 85.

serum treatment, (40) 783.

studies, (26) 678; (31) 884; (32) 881; (35) 78,

884.

treatment, (35) 379.

oestrus and ovulation in, (40) 663.

parasites of, (39) 891.

plague, (40) 183.

plague—

and hog erysipelas, relation, (31) 483.

auto-infection in, (34) 279.

bacterium, opsonic power of serums against,

(27) 285.

confusion with tuberculosis in hogs, (31)

683.

immunization, (26) 184, 289, 578, 676; (27)

290, 482, 887; (28) 285, 682.

in Prussia, (27) 181.

notes, (26) 373; (40) 783.

relation to hog cholera, (26) 383.

- Swine—Continued.
 plague—continued.
 studies, (28) 682.
 treatment, (26) 88, 587; (30) 586.
 vaccines, tests, (31) 183.
 pox in young pigs, (32) 379.
 relation of breed and age to prolificacy, (40) 770.
 salt poison in, (40) 684.
 vaccination, after-effects, (39) 392.
- Swiss chard—
 as forage crop, (28) 267; (31) 137.
 for dairy cows, (31) 771.
- Sword beans—
 as cover crop, (31) 635.
 culture experiments, (27) 233, 841.
 culture in Porto Rico, (29) 631.
 description, (30) 828.
 notes, (23) 838.
- Sycamore—
 blight, notes, (34) 56.
 cocculus, notes, (30) 53.
 lace-bug, studies, (38) 359.
 maple, forcing experiments, (28) 435.
- Sycamores, wood structure, (39) 50.
- Sycophaga nota n.sp., description, (30) 55.
- Sycoryetes philippinensis n.sp., description, (30) 55.
- Sylepta derogata, notes, (28) 654.
- Sylepta sp., notes, (30) 752.
- Sylvanus, *see* Silvanus.
- Sylvilagus nuttalli, host of spotted fever tick, (26) 64.
- Sylvin, effect on coherence of soils, (31) 123.
- Symbiosis—
 and parasitism, differentiation, (28) 35.
 bacterial, in Rubiaceae, (32) 327.
 in autumnal leaves, (37) 327.
 review of literature, (28) 130.
- Symbiotes—
 action on constituents of fat, (40) 464.
 and vitamins, similarity, (40) 363.
 as agents of ketonization, (40) 464.
- Symbombicina, origin, (32) 850.
- Symoothix oxyacanthella, hymenopterous parasite of, (26) 658.
- Sympha agromyzae n.sp., description, (30) 855.
- Sympherta mnemonicae n.sp., description, (32) 852.
- Symphoromyia attacking man, (34) 554.
- Symphytum—
 asperillum, culture and composition, (32) 631.
 officinale, cell proliferant of, (26) 580.
- Sympiesis—
 agromyzae n.sp., description, (31) 355.
 ancyllae n.sp., description, (38) 661.
 felti n.sp., description, (26) 353.
 n.spp., descriptions, (30) 661.
 sericeicornis, studies, (28) 560.
 stigmatipennis, notes, (36) 655.
- Sympiesomorphellus bicoloriceps n.sp., description, (36) 259.
- Symptomatic anthrax, *see* Blackleg.
- Symydobius—
 albasiphus n.sp., description, (31) 754.
 americanus n.sp., description, (40) 262.
- Synaldis incisus n.sp., description, (27) 60.
- Synanthedon—*see also* Aegeria and Sesia.
 pictipes, life history, (32) 349.
 pictipes, notes, (36) 549.
 pictipes, studies, (37) 159.
 (Sesia) geliformis, notes, (38) 762.
- Syncearia laurifolia, strength and elasticity tests, (27) 43.
- Synchytrium—
 endobioticum—
 host plants, (37) 753.
 notes, (28) 243; (30) 845; (31) 149; (32) 342;
 (33) 846, 849, 850; (40) 847.
 studies, (27) 351; (34) 844.
 solani, notes, (30) 47.
 spp., studies, (28) 844.
 transfer of Chrysophlyctis to, (26) 547.
- Syneta albida, notes, (32) 651; (35) 364; (36) 58.
- Syngamus—
 bronchialis, notes, (39) 892.
 laryngeus from cattle in Philippines, (33) 284.
- Synoptic charts, daily, of the northern Hemisphere, (31) 213.
- Synovitis of coronary joint, treatment, (30) 185.
- Synoxylon basillare—
 on pecan, (39) 557.
 studies, (31) 852.
- Syntaxis libocedrii n.g. and n.sp., description, (34) 364.
- Synthetocaulus spp., notes, (30) 285.
- Syntomaspis—
 amelanchieris n.sp., description, (40) 656.
 druparum, *see* Apple seed chalcid.
 myrtacearum n.sp., description, (37) 59.
- Syphaerophoria cylindrica, notes, (28) 254.
- Syphilis—
 diagnosis, (35) 180.
 in rabbits, treatment, (31) 284.
 rôle of specific fats in complement fixation, (39) 80.
- Syphilitic serum, toxicity toward guinea pigs, (35) 180.
- Syrtria pipiens, notes, (36) 460.
- Syrphid—
 fly, breeding and colonizing, (31) 756.
 fly, economic importance, (40) 356.
 larvae, myiasis due to, (39) 287.
- Syrphidae—
 defertilization of flowers by, (39) 734.
 early spring, in California, (38) 863.
 in California, (36) 56.
 life histories, (26) 349; (28) 254.
 notes, (36) 255, 553.
 of District of Columbia, (37) 57.
 of Maine, (36) 460; (38) 302.
 of Ohio, (30) 552.
- Syrphophagus mesograptae, notes, (31) 758.
- Syrphus—
 americanus, destructive to citrus plant lice, (26) 755.
 americanus, life history, (28) 254.
 fly, corn-feeding, life history, (34) 358.
 fly, predacious on froghopper nymphs, (30) 457.
 knabi, life history, (38) 362.
 oronoensis n.sp., life history, (38) 362.
 spp. parasitic on rose aphids, (31) 250.
 xanthostoma, life history, (29) 456.
- Syssphingina, origin, (32) 850.
- Systates irregularis, notes, (29) 853.
- Systellogaster ovivora n.g. and n.sp., description, (38) 165.
- Systena—
 basalis, notes, (37) 256.
 spp., notes, (29) 761.
 taeniata, notes, (35) 54.
- Tabanidae—
 greenish blood of, (29) 54.
 larvae, rearing, (38) 60.
 of Australia and Tasmania, (26) 456.
 British Columbia, (32) 551.
 District of Columbia, (40) 757.
 Saskatchewan, (39) 661.
 oriental species, revision, (27) 359.
- Tabanus—*see also* Gaddy.
 americanus, notes, (40) 263.
 collecting larvae, (40) 757.
 ignotus injurious to rice, (33) 555.
 mexicanus, notes, (36) 553.
 parasitic flagellates of, (26) 84.
 relation to swamp fever, (39) 162.
 spp. as anthrax carriers, (39) 161.
 striatus, biology, (30) 253.
 striatus, relation to anthrax, (30) 780; (31) 776.
 striatus, relation to surra, (30) 253; (31) 777.
- Tabebuia spectabilis, notes, (40) 44.
- Table d'hôte meals, economy, (39) 67.
- Table furnishings, origin and development, (31) 856.
- Tabosa grass—
 digestibility, (31) 863.
 hay, mineral constituents, digestibility, (40) 769.
- Tachardia lacca—
 culture in India, (28) 654.
 notes, (26) 248.
 studies, (35) 463, 659.
- Tachina—
 robusta, notes, (31) 752.
 spp., parasitic in arthropods, (39) 658, 659.
 spp., parasitic on gipsy moth, (31) 652.
- Tachinid—
 flies, studies, (26) 860.
 parasite with intracuticular stage, (33) 157.
 species, nonintentional dispersal by man, (35) 259.
- Tachinidae—
 Canadian hosts, (29) 358.
 new, from North America, (36) 255.

- Tachinidae—Continued.
 new nocturnal species, (34) 360.
 new species from New England, (35) 259.
 of New England, (37) 763.
 of North America, notes, (27) 457; (40) 653.
 of Quebec, (32) 757.
- Tachinophyto (*Hypostena*) sp., parasitic on sugar cane borer, (34) 753.
- Taenia—
 crassicolis affecting rats, (29) 755.
 echinococcus in sheep liver, (39) 283.
 expansa, infestation of lambs by, (37) 374.
 expansa, life cycle, (39) 162.
 hydatigena, notes, (28) 681.
 krabbel affecting reindeer, (27) 182.
 marginata in liver of swine, (37) 477.
 ovis, notes, (29) 887.
 pisiformis, development in kittens, (37) 693.
 pisiformis in cats, (40) 685.
 saginata—
 in a child, (33) 864.
 studies, (29) 782.
 transmission by flies, (38) 563.
 spp., dissemination by flies, (30) 659.
 struthionis, notes, (26) 487.
- Taeniasis, human, relation to measles of domestic animals, (32) 271.
- Taeniocampa alia, notes, (28) 156.
- Taenioid cestodes of the dog, cat, and related carnivores, (37) 82.
- Taeniolysins, presence in immune serums, (28) 375.
- Taeniopteryx spp., studies, (39) 256.
- Taenioten scalaris, notes, (30) 454.
- Taeniothrips—
 inconsequens, remedies, (38) 259.
 inconsequens, studies, (40) 547.
 pyri, *see* Pear thrips.
- Tagetes spp., cut, preservation, (31) 837.
- Tagua palm, description and utilization, (30) 46.
- Takadiastase—
 action on digestive power of animals, (33) 569.
 cleavage of organic acids by, (30) 503.
 notes, (29) 609.
 proteolytic activity, (30) 203.
- Taka-koji, preparation and use, (32) 710.
- Takosis in goats, (37) 477.
- Talahib, notes, (26) 362.
- Talc, relation to polyneuritis gallinarum, (29) 865.
- Talc, use in confectionery, (33) 364.
- Taliparamba Agricultural Station, report, (37) 343.
- Tallow—
 prices of in India, (30) 896.
 production in United States, (40) 614.
 wastes, fertilizing value, (29) 129.
- Tallows, plant, of East Indies, (32) 201.
- Talpa europea, feeding habits, (31) 846.
- Talus slopes, effect on conservation of snow, (29) 814.
- Tamales, preparation, (27) 665.
- Tamarack—
 for fence posts, (40) 744.
 unit stresses for, (36) 91.
- Tamari-koji, fungi and composition of, (29) 161.
- Tamarind sirup, manufacture and analyses, (33) 805.
- Tamarindillo, culture, (34) 736.
- Tamarinds, analyses and use, (30) 363.
- Tamarisks, notes, (27) 528.
- Tamarix—
 spp., notes, (27) 528.
 usneoides, analyses and digestibility, (27) 872; (32) 167.
- Tan bark—
 ashes, analyses, (38) 626.
 reducing harshness of, (35) 317.
- Tan extracts from mangrove, (40) 47.
- Tan plants of Iowa, (29) 626.
- Tanagers, development of stomach in, (32) 265.
- Tanaomastix n.g., and n.sp., description, (40) 359.
- Tangelos—
 descriptions and value in Florida, (40) 247.
 paper on, (29) 839.
- Tangerine—
 mildew, notes, (34) 649.
 powdery mildew in southern California, (34) 447.
- Tangier pea, culture experiments, (28) 532.
- Tania—*see also* Tannia.
 meal, analyses, (40) 173.
 varieties, (26) 733; (27) 233.
- Tankage—*see also* Garbage, tankage.
 amino acid in, (33) 665.
 analyses, (26) 325, 468; (27) 68; (28) 265, 464, 572, 627, 769; (29) 270, 367, 626; (30) 68, 169, 565; (31) 73, 168, 624, 663; (32) 169, 465, 667; (33) 371, 568, 665; (34) 263, 371, 467, 566; (35) 562, 867; (36) 65, 268, 667, 765; (37) 268, 471, 767; (38) 67, 368, 369; (39) 70, 270, 370; (40) 72, 571.
 as fertilizer, (31) 323.
 as fertilizer, analyses, (39) 222.
 ash analyses, (29) 861.
 availability of nitrogen in, (26) 124; (27) 723; (28) 724; (35) 426.
 blood, analyses, (34) 371.
 decomposition in soils, (36) 116.
 digester, analyses, (40) 665.
 distribution of nitrogen in, (36) 269.
 effect on composition of wheat, (38) 518.
 feeding value, (39) 275, 375, 478, 776, 779; (40) 72, 75, 278, 279.
 fertilizer v. selected, for pigs, (29) 872.
 fertilizing value, (28) 724, 725; (30) 436; (31) 124; (33) 432; (34) 129; (36) 818; (37) 540; (38) 422, 517; (39) 327, 328, 623.
 for arid soils, (36) 726.
 for corn-fed pigs, (38) 474.
 for pigs, (38) 675.
 high-grade, fertilizing value, (34) 219.
 nitrification—
 in acid soils, (30) 626.
 in soils, (26) 722; (39) 814.
 production and use, (27) 327; (29) 517; (30) 126.
 vegetable, analyses, (39) 270.
- Tanks, construction, (30) 893.
- Tannase—
 enzym, formation, (27) 408; (30) 411.
 formation in *Aspergillus niger* and *Penicillium* spp., (29) 132.
- Tannery—
 effluent, disinfection, (36) 180.
 sewage, disinfection, (38) 784.
 waste, analyses and use, (32) 424.
 waste, disposal, (32) 790.
 wastes, fertilizing value, (27) 219; (29) 129.
- Tannias—
 culture and use, (40) 763.
 varieties, (36) 735; (38) 335.
 variety tests, (40) 522.
- Tannic acid—
 as protection for oak wood, (27) 654.
 determination in tanning materials, (34) 508.
 effect on—
 action of alcohol on plant cells, (34) 333.
 fungi, (28) 444.
 secretion of diastase by fungi, (31) 13.
 fermentation, notes, (26) 203; (30) 410, 411.
 relation to dry rot resistance to oak wood, (32) 150.
- Tannin—
 content of trees, notes, (27) 828.
 determination, (35) 317.
 determination in cider, (32) 207.
 determination in plant juices, (33) 310.
 determination with casein, (26) 202.
 distribution in black wattle, (33) 523.
 distribution in plants, (28) 227.
 effect on chestnut blight fungus, (36) 149.
 effect on soils, (36) 513.
 extract, mangrove, manufacture, (27) 210.
 extracts, preparation, (28) 146.
 extracts, production from wood, (28) 50.
 formation, relation to mitochondria, (29) 827.
 humification, (38) 26, 27.
 in acorns, notes, (28) 526.
 assimilating organs of Leguminosae, (30) 227.
 barley seed coats, (27) 730.
 oak heartwood, (34) 849.
 Pacific coast trees, (34) 508; (38) 309.
 persimmons, studies, (27) 228; (30) 502.
 methods of analysis, (32) 314.
 physiological significance, (38) 729.
 plants, treatise, (36) 142.
 presence and significance in plants, (34) 825.
 relation to coloration of flowers, (28) 227.
 substances in Malabar tea, (31) 114.
 synthetic, notes, (30) 16.
 use in preparation of tea, (31) 114.
 utilization by plants, (36) 329.

- Tanning**—
chemical handbook, (33) 18.
extracts, preparation, (30) 615.
materials—
from Latin America, (38) 248.
in Belgian Congo, survey, (39) 207.
methods of analysis, (32) 314; (40) 714.
of Dutch East Indies, (30) 697.
sampling, (35) 316.
plants of Chile, (38) 336.
substances, vegetable, methods of analysis, (30) 813.
- Tannins**—
effect on germination of seeds, (33) 825.
methods of analysis, (29) 408.
monograph, (30) 311.
preparation, (29) 408.
qualitative analysis, (26) 809.
vegetable, qualitative reactions, (26) 808.
- Tans of New Zealand**, (38) 309.
- Tanyemecus palliatus**, notes, (31) 655.
- Tanypezidae** in United States, (35) 759.
- Tapeworm**—
beef, in a child, (33) 864.
beef, studies, (29) 782.
bothriocephalid, from the dog, (39) 791.
cysts in mutton, (29) 886.
in liver of swine, (37) 477.
new, from dogs, (36) 354.
tri-radiate form in a horse, (36) 183.
- Tapeworms**—
biological detection, (31) 281.
dissemination by flies, (30) 659.
host relations, (33) 681.
in fowls, (33) 775; (35) 577.
fowls, transmission, (36) 183.
horses, (40) 186.
pigs, relation to rabbits, (29) 482.
sheep, (31) 86; (39) 773.
sheep, morphology of, (30) 584.
sheep, treatment, (27) 683.
water fowl, (29) 784.
of Carnivora in man, (33) 681.
protection against digestive enzymes, (33) 478.
proteocephalid, monograph, (32) 853.
treatment, (28) 80.
- Taphrina**—
aurea, notes, (26) 852.
bussei, notes, (26) 851.
communis, treatment, (40) 449.
sp., notes, (26) 747; (28) 241, 747.
spp. on plum, (40) 452.
- Tapinostola musculosa**—
life history and remedies, (33) 859.
notes, (30) 855; (32) 847.
- Taploca**—
diseases, notes, (28) 148.
examination, (29) 361.
flour, use in baking, (34) 365.
starch, baking tests, (34) 460.
water content as affected by cooking, (26) 462.
- Tar**—
effect on penetration of creosote, (39) 394.
exposed to traffic and weathering, changes in, (27) 89.
for roads, (34) 684.
fumes, effect on vegetation, (35) 734; (37) 327.
oils, characteristics, (26) 206.
pads for cabbage plants, description, (31) 353.
pathological action on plants, (32) 826.
products, production from wood, (28) 50.
spraying machines, tests, (29) 687.
vapors, effect on vegetation, (30) 32.
water as soil disinfectant, (31) 621.
- Tarabagani crab**, composition, (40) 171.
- Tarache delecta**, studies, (40) 754.
- Taralli**, composition and nutritive value, (30) 62.
- Tarantula spider** attacking bees, (40) 359.
- Tarbagans**—
notes, (27) 454.
relation to plague, (26) 653.
susceptibility to pneumonic plague, (28) 180.
- Tarhonoranthus camphoratus**, analyses and digestibility, (27) 871; (32) 167.
- Tares** as green manure for wheat, (35) 426.
- Targionia**—
sacchari, notes, (26) 60; (29) 53.
vitis, notes, (26) 655; (36) 755.
- Tarichium uveella**, notes, (36) 757.
- Tariff revision** in Belgium, (26) 93.
- Tarnished plant bug**—
biology, (40) 57.
egg parasite of, (31) 550.
false, as a pear pest, (30) 358.
false, notes, (29) 252, 354; (36) 550.
false, oviposition, (34) 255.
injurious to apples, (28) 453.
notes, (28) 159; (30) 655; (32) 849; (33) 352; (35) 253; (37) 255; (38) 57.
relation to fire blight, (30) 650; (33) 744.
relation to peach "stop-back," (28) 159; (29) 354.
remedies, (34) 356.
studies, (31) 650; (40) 455.
- Taro**—
as food, (36) 561.
blight, description and treatment, (31) 52.
fertilizer experiments, (26) 135; (29) 233.
Hawaiian, as food, (40) 557.
notes, (26) 362.
preservation and analyses, (39) 208.
recipes, (28) 660.
yield as affected by deep plowing, (35) 527.
- Tarragon rust**, notes, (28) 747.
- Tars**—
coke-oven, of United States, (26) 591.
effect on mold growth, (26) 206.
refined, as affected by naphthalene, (26) 188.
specifications and definitions, (35) 888.
- Tarsonemus**—
approximatus, notes, (28) 457.
pallidus, notes, (28) 554; (37) 766.
pallidus, remedies, (33) 58.
pallidus, studies, (37) 856, 857, 858.
sp. on Cyclamen, (37) 766.
spp., notes, (26) 760.
spirifex, description, (35) 468.
spirifex, notes, (32) 853.
translucens on tea, (40) 656.
waitei n.sp., description, (28) 357.
waitei n.sp., notes, (26) 760; (32) 159.
- Tartar emetic**, use in treatment of trypanosomiasis, (40) 781.
- Tartaric acid**—
action in the body, (36) 468.
as affected by yeast, (29) 504.
assimilation by plants, (31) 426.
behavior toward oxidizing agents, (26) 25.
decomposition by sunlight, (30) 431.
detection, (28) 23.
determination, (30) 612; (35) 417.
determination in—
fruits and their products, (26) 805.
grape products, (27) 499.
presence of citric acid, (36) 801.
presence of malic acid, (28) 24; (38) 805.
presence of metals, (29) 808.
wine, (29) 798; (31) 505.
wine and grape juice, (32) 297.
effect on—
bread fermentation, (27) 268.
carbon assimilation of plants, (27) 525.
fungi, (28) 444.
hemolytic reaction, (36) 878.
forcing plants with, (28) 837.
inversion and disappearance, (36) 801.
occurrence in honey, (28) 166.
of grape musts and wines, (37) 310.
optical rotation, (27) 497.
toxicity, (28) 661.
- Tartrate**—
action on isolated intestine, (37) 471.
nephritis, studies, (40) 285, 383.
- Tartrates**—
determination in baking powder, (40) 712.
toxic action, (40) 465.
- Tartrazin**—
determination, (36) 714.
determination in mixture of dyes, (38) 12.
notes, (36) 300.
- "Tarwad"** bark as tanning agent, (37) 147.
- Tätté**—
dietetic value, (29) 475.
notes, (27) 880.
- Taurin**, use against tuberculosis, (37) 275.
- Taxads of Japan**, (36) 539.
- Taxation**, land, notes, (29) 391.
- Taxonomic papers**, standards for, (26) 855.
- Taxonus nigrisoma** *see* *Ametastegia glabrata*.

Taxus—

- baccata, culture experiments, (26) 141.
- cuspidata, food plant of purple scale, (26) 756.

Tea—

- alkaloids in, (31) 358.
- analyses, (31) 358; (32) 856.
- analyses and valuation, (27) 612.
- aphis, notes, (37) 662.
- Arabian, culture in Egypt, (34) 232.
- aroma in, (26) 309.
- artificial coloration, (27) 809.
- black rot, studies, (38) 354.
- blister blight, notes, (28) 241.
- box industry in Assam, (29) 440.
- brown blight, notes, (38) 548.
- brown blight, treatment, (38) 354; (39) 752.
- chemistry and manufacture of, (33) 842.
- commercial, composition, (40) 14.
- cover crops for, (30) 444.
- culture—
 - and manufacture in United States, (26) 641.
 - and manufacture, treatise, (38) 347.
 - at Peradeniya experiment station, (31) 837.
 - handbook, (39) 449.
 - in Ceylon and British India, (28) 542.
 - India, (32) 131.
 - Natal, (28) 341.
 - Nyasaland, (26) 829.
 - Persia and Trans-Caucasian Russia, (33) 841.
 - Sumatra, (35) 449.
 - various countries, (39) 244.
- detection of color in, (30) 207.
- diseases—
 - and pests, control, (33) 643.
 - and pests in Sumatra, (39) 57.
 - control, (40) 349.
 - in India, (32) 346; (33) 650; (37) 252.
 - notes, (26) 51; (27) 747; (30) 48, 845, 849; (31) 55, 56; (32) 340; (33) 545; (34) 744, 835; (38) 351, 354; (39) 452, 753; (40) 48, 53, 851.
- effect on gastric secretion (26) 466.
- evaluation on stem content basis, (35) 266.
- examination, (32) 64.
- factors affecting quality, (35) 367.
- fermentation, investigations, (37) 44.
- fermenting, microorganisms in, (32) 111.
- fertilizer experiments, (30) 43; (32) 46; (34) 236.
- 835; (39) 647.
- from *Origanum vulgare albidiflorum*, (33) 661.
- fungus blights, notes, (39) 758.
- green manure crops for, (34) 344.
- green manuring experiments, (38) 20.
- heather, as substitute for black tea, (33) 866.
- imports into United States, (34) 43.
- improvement by selection, (37) 43.
- industry in Java and Sumatra, (36) 241.
- industry in Sumatra, (31) 639.
- industry in various countries, handbook, (30) 238.
- infusions, combination of caffeine and tannin in, (29) 463.
- infusions, studies, (29) 566.
- ingestion as protection against cold, (35) 474.
- ingestion, effect on uric acid excretion, (37) 470.
- insects affecting, (26) 553; (30) 753; (32) 340; (34) 549, 652, 835; (36) 355; (38) 461; (39) 556, 862; (40) 259.
- Java, caffeine in, (34) 166.
- leaves, analyses, (38) 626.
- looper caterpillar, notes, (26) 61.
- Malabar, tannin substances in, (31) 114.
- manufacture, (28) 360; (29) 118.
- manurial treatment, (33) 842.
- microorganisms in, (28) 512.
- mites, notes, (32) 557; (40) 656.
- mosquito, notes, (31) 850.
- notes, (29) 463.
- oil, detection, (29) 613.
- osmotic pressure, (28) 262.
- packing in foil containing lead, (33) 66.
- plant, new, description, (26) 139.
- preparation for market, (28) 542.
- prices of in India, (30) 896.
- pruning, (32) 236.
- pruning experiments, (39) 647.
- pruning wounds, treatment, (30) 43.
- red rust, notes, (31) 49; (34) 55, 249.
- rim blight, notes, (38) 555, 548.
- roots and their diseases, (37) 52.
- scale, notes, (28) 754.

Tea—Continued.

- seed—
 - bug, notes, (29) 446; (30) 853.
 - gardens, care and management, (34) 835.
 - germination, (35) 745.
 - germination and selection, (37) 835.
 - oil of, (37) 109.
 - planting experiments, (33) 842.
 - tests, (30) 444, 742; (31) 339.
 - seedlings, liming experiments, (33) 842.
 - selection experiments, (35) 745.
 - shot-hole borer, notes, (40) 266, 453.
 - soils of Java and Sumatra, (38) 542; (39) 423.
 - spraying apparatus for, (38) 355.
 - statistics in United States, (33) 894.
 - thrips, notes, (40) 59.
 - tortrix, studies, (40) 453.
 - treatise, (29) 265; (36) 241.
 - use by prehistoric Americans, (38) 167.
 - value in the diet, (29) 664.
 - withering, fermentation, and drying, (37) 619.
- Teachers—
- agricultural instruction for, (26) 9, 198, 303, 595, 697, 898; (27) 296, 490; (29) 297; (30) 93; (31) 494, 498; (34) 697, 799.
 - agricultural training for, (28) 8, 691; (30) 98; (32) 897; (33) 596, 799.
 - correspondence courses for, (35) 592; (36) 96.
 - county training schools for in Wisconsin, (36) 690.
 - economic and social conditions of, (31) 462.
 - farm school in Victoria, (35) 92.
 - nature study training for, (29) 298; (34) 692.
 - of rural subjects, qualification, (29) 296.
 - preparation for—
 - nature study and civic biology, (32) 898.
 - rural work, (27) 897.
 - secondary agriculture, (33) 798; (35) 406.
 - relation to boys' corn club work, (26) 794.
 - rural—
 - preparation, (26) 596.
 - training courses for, (28) 897.
 - training in normal schools, (32) 690.
 - summer schools in Canada, (34) 597.
 - training, (35) 92.
 - training—
 - and certification in Indiana, (32) 595.
 - centers for, (33) 194, 195.
 - for agricultural extension, (26) 299; (36) 293.
 - for agricultural instruction, (36) 691.
 - for rural schools, (32) 794.
- Teak—
- annual ring formation in, (34) 839.
 - colonial, strength and elasticity tests, (27) 43.
 - forests in Burma, (26) 141.
 - forests in Java and Madagascara, (34) 239.
 - gummosis, notes, (27) 854.
 - rot bacteria affecting, (29) 345.
 - rotation period, (38) 545.
 - stands, rotation, (39) 648.
 - trees and stands, measuring, (34) 839.
 - wood, natural regenerated, growth, (39) 546.
 - wood, properties and utilization, (34) 440.
 - working plans in Burma, (34) 839.
- Teal, Laysan, new generic name for, (37) 758.
- Teals, reproductive organs of, (26) 876.
- Teasel—
- analyses, (28) 464.
 - aphis, notes, (29) 454.
 - culture, (30) 440; (31) 524.
 - description and culture, (29) 142.
- Teat strictures, treatment, (26) 183.
- Technical—
- education in Canada, (31) 596.
 - instruction in Ireland, (31) 898; (33) 790; (36) 596; (38) 598.
- Technology, chemical—
- of textile fibers, (32) 308.
 - treatise, (29) 413.
- Tecu burner, new, description, (35) 801.
- Tecoma radicans, notes, (27) 346.
- Teeth—
- as affected by diet, (35) 767.
 - degeneration in oxen and sheep, (33) 270.
- Teft—
- brown, culture in Porto Rico, (29) 631.
 - culture experiments, (33) 31.
- 'grass—
- culture experiments, (30) 632; (38) 33.
 - culture in Hawaii, (32) 730.
 - culture in Rhodesia, (27) 637.

Teff—Continued.

- grass—continued.
 - culture under dry farming, (30) 435.
 - notes, (26) 361; (37) 29.
 - notes and analyses, (28) 738.
 - varieties, (30) 435.
- hay, analyses, (32) 465; (34) 435; (38) 368.
- history and culture, (34) 435.
- Tegrodora erosa, notes, (33) 746.
- Telamona sp., notes, (26) 148.
- Telea polyphemus, notes, (26) 656.
- Telea (?), notes, (31) 650.
- Telogy in fowls, (32) 263.
- Telegraph poles, dry rot of, (33) 745.
- Telegraphy, wireless, use in meteorology, (32) 117.
- Telenomus—
 - clisiocampae, notes, (36) 556.
 - coloradensis, parasitic on tent caterpillar, (37) 667.
 - dilophonotae, notes, (28) 355.
 - n.spp., descriptions, (26) 352; (32) 348.
 - quaintancel, notes, (26) 857; (30) 659.
 - sp., parasitic on army worms, (36) 60.
 - sp., rearing and shipping, (29) 658.
 - spp., notes, (31) 256.
 - sphingis, notes, (29) 658.
 - vassilievi, transportation experiments, (31) 59.
- Telephone—
 - companies—
 - cooperative, in Minnesota, (32) 688.
 - mutual, in Wisconsin, (28) 593, 895.
 - construction and maintenance in National Forests, (34) 191.
 - systems, rural, in Germany, (31) 592.
- Telephorus lituratus, studies, (36) 858.
- Telfairia pedata, oil content, (31) 234.
- Tellurium, effect on plants and plant parasites, (31) 826.
- Temir experiment field, report, (26) 620.
- Temnostoma bombylans, notes, (31) 352.
- Temperature—see also Climate and Soil temperature.
 - American, effect on European rainfall, (31) 416.
 - and growing season in Illinois, (39) 319.
 - annual, of United States, (28) 212.
 - as affected by forests, (29) 842.
 - as affected by smoke, (32) 117.
 - at Aas, Norway, (36) 617.
 - at Mt. Weather and vicinity, (27) 316.
 - at various heights from ground, (27) 816.
 - atmospheric—
 - annual variations, (37) 417.
 - as affected by forest growth, (31) 415.
 - as affected by snow and ice, (31) 511.
 - body—
 - in man after muscular work, (32) 664.
 - regulation, (28) 666.
 - rise during marching, (26) 566.
 - causes and effects of variation in range, (30) 211.
 - changes—
 - due to terrestrial radiation, (36) 617.
 - effect on branch movements in trees, (29) 526.
 - effect on infection of respiratory tract, (36) 64.
 - effect of respiratory exchange of infants, (26) 766.
 - forecasting, (35) 505.
 - in, (33) 19.
 - in Europe and North America, (31) 717.
 - world-wide, (37) 15.
 - city and suburban, (27) 414.
 - coefficient of permeability in plants, (38) 25.
 - coefficients in plant geography and climatology, (30) 117.
 - conditions at New Orleans, (27) 816.
 - conditions in cranberry marshes of Wisconsin, (26) 514.
 - control plant, notes, (29) 658.
 - correlations in United States, (38) 509.
 - daily changes, (27) 816.
 - daily ranges in Nevada, (28) 716.
 - departures in United States, (26) 513.
 - determinations in entomology, (37) 355.
 - determining probable minimum, (29) 510, 511.
 - diurnal changes in, (32) 810.
 - effect on—
 - alcohol yeast, (29) 714.
 - alfalfa, (31) 629.
 - bacteria in milk, (35) 777.

Temperature—Continued.

- effect on—continued.
 - bacteria in water, (29) 814.
 - carbon dioxide excretion in man, (30) 264.
 - cattle ticks, (26) 459.
 - cement mortar, (33) 589.
 - cereals, (27) 15.
 - Chlamydomonas, (27) 729.
 - complement fixation rate, (37) 688.
 - destruction of invertase, (26) 504.
 - diastases, (33) 30.
 - distribution of insects, (27) 655.
 - expulsion of ascospores of chestnut blight fungus, (31) 451.
 - ferments, (26) 308.
 - flesh of poultry, (30) 259.
 - fumigation, (29) 762.
- effect on germination—
 - and growth of wheat, (29) 731.
 - of conidia of downy mildew, (26) 851.
 - of Gramineae, (38) 24.
 - of seeds, (26) 131, 200; (27) 220, 444; (28) 327; (31) 222; (35) 222.
- effect on—
 - Glomerella, (32) 749; (34) 541.
 - glucose formation in potatoes, (33) 310.
 - gravitation, (36) 419.
 - growth of corn seedlings, (32) 334.
 - growth of parasitic fungi in cultures, (38) 757.
 - growth of peas, (35) 432.
 - growth of small grains, (37) 533.
 - houseflies and mosquitoes, (33) 860.
 - human body, (34) 464.
 - insects, (30) 545; (33) 252.
 - lipolysis of esters, (28) 63.
 - longevity of insects, (32) 244.
 - metabolism, (31) 362.
 - metabolism in animals, (32) 765.
 - microflora of hay, (33) 467.
 - milk fat, (29) 580.
 - milk fat globules, (34) 570.
 - moisture intake of seeds, (35) 222.
 - molting of walking-stick, (28) 353.
 - nitrification in soils, (35) 627.
 - nuclease, (28) 803.
 - oviposition of alfalfa weevil, (33) 257.
 - permeability of plant cells, (35) 224.
 - phototropism, (34) 628.
 - phototropism in oat seedlings, (30) 725.
 - physical processes in soils, (34) 216.
 - plant growth, (33) 129.
 - plant respiration, (28) 428; (36) 28.
 - plant variation, (29) 339.
 - potato scab, (33) 245.
 - proteolytic activity of ferments, (35) 482.
 - quality of wheat, (30) 664.
 - rate of ammonification, (31) 127.
 - reaction of lysin with nitrous acid, (38) 10.
 - respiration coefficient of seeds, (29) 525.
 - respiration of plants, (26) 822.
 - root growth, (36) 28.
 - strength of concrete, (34) 889.
 - the organism, (32) 765.
 - tropic sensitivity of oat seedlings, (28) 630.
 - water movement in soils, (34) 215.
 - winterkilling of cereals, (38) 415.
 - yield of cereals, (28) 41.
- extreme, in 1916, (36) 509.
- fluctuations in human body, (26) 466; (27) 768.
- gradients, vertical, (30) 317.
- gradients, vertical, in Hawaii, (27) 316.
- high, effect on agglutinin formation, (36) 575.
- high, effect on frogs, (35) 851.
- high, use against cereal insects, (32) 246.
- highest in United States, (33) 716.
- in British Columbia, (34) 320.
- central Rocky Mountain region, variations, (26) 117.
- northern Europe, (31) 316.
- soils, relation to bacterial activity, (29) 423.
- United States, (27) 616.
- western and equatorial Africa, (34) 208.
- injurious to fruit, (27) 413, 439.
- interior, of concrete, (29) 214.
- inversion in Grand River Valley, Colo., (34) 614.
- inversions in relation to frost, (34) 715.
- low, after-effects on germinating oats, (35) 330.

Temperature—Continued.

low, effect on—

- anthrax bacillus, (32) 81.
- decomposition of foods, (31) 659.
- enzymes, (33) 803.
- fish, (31) 459.
- frogs, (34) 751.
- fruit culture in New York, (34) 737.
- fruits and cider, (27) 460.
- fungi and bacteria, (34) 538.
- germination of beet seeds, (37) 829.
- germination of seeds, (26) 821.
- grapes, (29) 839.
- milk, (31) 373.
- plant tissue, (32) 42; (35) 234.
- seeds, (27) 329.
- spore germination of rusts, (27) 45.
- trichina, (34) 83.
- wintering of cereals, (26) 733.
- young apples, (27) 546.

low—

- germicidal effect, (34) 382.
- in rice culture, (35) 718.
- in Sudan, (31) 229.
- of southern Hemisphere, (34) 118.
- physiological effects, (26) 452.
- protection of plants against, (27) 333.

lowest, (38) 210.

lowest with salt and ice, (31) 615.

mean, time of observation, (27) 616.

minimum and sunrise, difference in time, (40) 314.

minimum, on Mt. Whitney, (28) 415.

minimum, predicting, (32) 811; (38) 209, 812.

mountain and valley, (36) 718.

of cultivated and uncultivated soils, (33) 510.

expired air, (31) 466.

glacial plunge basin, relation to vegetation, (40) 326.

ocean depths, (36) 719.

soils, under different conditions, (27) 214.

the atmosphere, (34) 614.

optimum, for plant growth, (38) 716.

records, (30) 17; (31) 416; (32) 717.

regulator, description, (29) 567.

relation to—

- cabbage Fusarium disease, (33) 346.
- chestnut blight, (37) 557.
- corn and wheat production, (38) 317.
- corn yield, (35) 618.
- cranberry fruit rots, (38) 454.
- crop production, (28) 716; (38) 208.
- crop systems and production, (26) 415.
- distribution of marine algae, (34) 32.
- germination of seeds, (33) 826.
- grape downy mildew, (27) 49, 449; (28) 448.
- grape roset, (26) 550; (29) 349.
- insect development, (31) 349.
- insects, (31) 847.
- leaf fall, (27) 221.
- plant growth, (35) 328; (39) 615.
- potato diseases, (30) 649.
- spring wheat yield, (33) 117; (39) 210.
- sun spots, (38) 115; (40) 416.
- wheat production in Australia, (36) 209.
- wind velocity, (40) 715.
- winter wheat yields, (38) 14.

rôle in distribution of plants, (31) 522.

summations, methods, (39) 810.

summer, at Paris and at Reno, Nevada, (33) 717.

sums, value in phenology, (27) 509.

supramaximal, effect on plants, (29) 27.

survey of Nevada, (27) 241.

underground, (35) 618.

variability, (36) 19.

variations—

- anomalies, (38) 210.
- in a mountain valley, (34) 613.
- in among crops, (30) 17.
- in France, (34) 415.

Tenant—

and landlord—

- contract between, (32) 390.
- distribution of produce between, (31) 390.
- division of capital between, (31) 192.
- partnership between, (30) 399.
- farm problems, notes, (29) 634.
- farmers in Great Britain, condition, (26) 791.

Tendipedidae of Canary Islands, (39) 868.

Tendipes plumosus, notes, (32) 554.

Tendons—

- chemistry of, (28) 201.
- form and function, in limbs of work animals, (29) 570.

Tendrils, nature, (38) 822.

Tenebrio obscurus—

- life history, (34) 65.
- remedies, (27) 258.

Tenebrionidae—

- catalogue, (26) 560.
- larvae, injurious to tobacco, (29) 761.
- of Philippines, (31) 553.

Tennessee—

Station—

- financial statement, (28) 796; (29) 696.
- notes, (26) 397, 900; (27) 398, 700, 900; (28) 196; (29) 98, 700; (30) 900; (32) 398, 600; (33) 198; (35) 98; (37) 198, 499, 600, 797; (39) 97, 698; (40) 199, 499, 600, 900.
- report of director, (28) 796; (29) 696.
- reports, (38) 398.

- University, notes, (26) 397, 900; (27) 398, 700, 900; (28) 196; (29) 98, 700; (30) 900; (32) 398, 600; (33) 198; (35) 98, 400; (36) 197; (37) 198, 300, 600; (38) 700; (39) 97; (40) 199, 698.

Tenodera sinensis, notes, (27) 755.

Tension, effect on root structure, (32) 825.

Tent caterpillar—

- cocoons poisoning hogs, (40) 586.
- egg contest, (33) 58.
- in California, (32) 152.
- notes, (29) 158, 251, 558; (32) 448, 551; (33) 155, 252; (34) 654, 752; (36) 854.
- polyhedral virus, (40) 255.
- remedies, (32) 540, 847.

Tent materials for frost protection, (33) 48.

Tenthecoris bicolor, notes, (40) 754.

Tenthredinidae in Luga district of Government of Petrograd, (34) 758.

Tenthredinoidea—

- immature stages, (31) 155; (33) 97.
- of Argentina, (31) 256.

Tenuipalpus—

- bioculatus n.sp., description, (33) 659.
- bioculatus, notes, (36) 859.
- californicus, notes, (28) 457.

Teosinte—

- and corn, crossing experiments, (26) 40.
- and corn hybrids, immunity to aphids, (38) 561.
- as forage crop, (31) 829.
- culture, (32) 226; (37) 136.
- culture—
 - experiments, (29) 426; (33) 31, 33; (37) 529; (38) 527.
 - in eastern Oregon, (38) 432.
 - in Philippines, (26) 361.
 - in Rhodesia, (27) 637.
- notes, (26) 362.
- water requirement, (32) 127.

Teparies, studies, (28) 639.

Tepary beans—

- as dry farm crop, (29) 736; (39) 736.
- culture, (32) 226.
- culture experiments, (29) 426; (32) 526; (33) 31; (38) 631.
- drought resistance, (39) 835.
- feeding value, (39) 776.
- notes, (27) 529.
- seed production, (38) 828.
- yields, (35) 527; (39) 434.

Tephrites onopordinis, oviposition, (40) 457.

Tephrochlamis canescens, hibernation, (34) 254.

Tephrosia—

- candida, culture experiments, (27) 233.
- hookeriana as a host plant of pink disease, (35) 154.
- purpurea, analyses and digestibility, (27) 871; (32) 167.
- purpurea as green manure for rice, (30) 339.
- purpurea, culture, (30) 335.
- spp., analyses, (29) 215.
- spp. as green manure, (36) 324.
- spp., fertilizing value, (34) 34.

Teratology—

- of plants, notes, (36) 734.
- of plants, treatise, (36) 430.

Terias nicippe pupae, color variation, (40) 263.

Termes—see also Leucotermes.

- flavipes, notes, (27) 657; (30) 154; (35) 54.
- flavipes on geraniums, (33) 58.

Termes—Continued.

- gestroi as pest of Para rubber, (35) 544; (36) 755.
- gestroi, notes, (28) 353.
- gestroi, remedies, (38) 759.
- lucifugus, destruction of redwood by, (26) 858.
- natalensis, notes, (30) 250.

Terminalia tomentosa, notes, (29) 443.

Termites—

- association with Entoloma microcarpum, (31) 58.
- black, of Ceylon, (31) 58.
- control in Malay Peninsula, (38) 460.
- destructive to rubber, (28) 353.
- destructive to trees, (28) 563.
- East African, notes, (30) 250.
- fungi cultivated by, (40) 453.
- Hevea, of Java, (31) 156.
- in Cuba, notes, (40) 453.
- in eastern United States, (32) 755.
- injurious to—
 - furniture and woodwork, (36) 355.
 - geraniums, (33) 58.
 - pecan, (38) 157.
 - shotgun cartridges, (37) 255.
 - sweet potatoes, (40) 260.
- Japanese, revision, (36) 654.
- lucifuge, studies, (27) 555.
- nature and remedies, (28) 753.
- notes, (27) 54, 454; (30) 154, 657, 853; (35) 54, 853; (40) 352.
- of India, (38) 359, 461.
- of West Africa, (36) 754.
- remedies, (27) 555; (31) 155.
- ridding houses of, (28) 562.
- studies, (27) 357; (28) 159, 562; (34) 754.
- timbers resistant to, (30) 536, 754.

Terns, notes, (27) 355.

Terpenes, physical constants, (36) 12.

Terra rossa, origin, (39) 513.

Terraces—

- construction, (32) 514; (34) 819; (37) 87.
- Mangum, notes, (27) 720.

Terracing—

- farm lands, (40) 188.
- in Java, (36) 723.
- in Texas, (35) 887.
- moisture and fertility control by, (31) 317.
- notes, (32) 597.
- of Java tea soils, (36) 320.

Terrapin scale—

- control in Maryland, (27) 552.
- investigations, (35) 156.
- notes, (29) 353.
- remedies, (26) 755.

Terrestrial—

- magnetism and solar radiation, concomitant changes in, (34) 614.
- rotation, effect on atmosphere and ocean, (32) 614.

Terriers—

- Airedale, prepotency in, (29) 770.
- popular sires of, (34) 370.

Testes—

- as affected by Roentgen rays, (26) 364.
- extract, effect on milk production, (37) 173.
- regeneration after experimental orchectomy in birds, (30) 266.

Testicle, interstitial gland, relation to secondary sex characters, (40) 467.

Testicular—

- antiserum, toxicity, (28) 676.
- cells, interstitial, in chickens, (34) 264.
- cells, interstitial, rôle of, (27) 69.
- cells, interstitial, studies, (26) 364; (28) 668.

Tetanus—

- antitoxin—
 - fixation by leucocytes, (26) 177.
 - preparation, (35) 384.
 - standardization, (31) 880.
 - studies, (39) 489.
- bacilli—
 - disinfection, (40) 478.
 - distribution and habitat, (33) 580.
 - in healed wounds, (36) 480.
 - studies, (39) 389.
- immunization, (26) 578; (27) 381; (29) 780; (31) 480, 880; (32) 274; (33) 84; (39) 388; (40) 179, 580.
- investigations, (33) 282.
- papers on, (33) 176.
- prophylaxis by antitoxic serum, (36) 181.

Tetanus—Continued.

- serum, valuation, (26) 178.
- spores, destruction in vaccine virus, (39) 80.
- spores in street dust, (38) 885.
- toxin—
 - action of formaldehyde on, (26) 782.
 - and antitoxin, avidity of, (26) 676.
 - antitoxin mixtures, immunization with, (34) 580.
 - concentration and purification, (34) 579.
 - effect on autolysis, (27) 183.
 - fixation, (26) 378.
 - neutralization of activity, (30) 182.
 - production, (36) 383.
- toxins, separation from other toxins, (38) 786.
- treatment, (26) 378, 783; (27) 183, 381; (29) 679, 883; (31) 580; (32) 476; (34) 782; (35) 75, 379, 784; (37) 79; (38) 580, 585; (40) 186, 779.

Tetany, parathyroid, in cats and dogs, (27) 787.

Tethelin—

- effect on growth of white mice, (35) 865.
- isolation and properties, (35) 8.
- use against tuberculosis, (37) 880.

Tetracarbonimid—

- identity with cyanuric acid, (38) 202.
- studies, (32) 215.

Tetradymia glabrata, toxicity, (39) 184.

Tetragonolobus purpureus, nodule bacteria of, (32) 33.

Tetraleurodes—

- mori, notes, (33) 59; (34) 752.
- olivinus n.sp., description, (26) 149.
- olivinus, notes, (27) 56.

Tetralobius fortnumi, notes, (39) 557.

Tetrameres fissispinus, notes, (35) 878.

Tetramorium caespitum—

- as pest of cold-frame and greenhouse crops, (34) 657.
- injurious to tobacco, (30) 759.

Tetramyxa—

- palustre, tissue invasion by, (40) 50.
- parasitica, studies, (27) 46.

Tetraneura—

- ulmi, notes, (28) 655.
- ulmisacculi, notes, (33) 253.

Tetranitromethan, assimilation by plants, (26) 32.

Tetranobia longipes, notes, (38) 365.

Tetranychina n.sp., description, (36) 660.

Tetranychoides californicus, notes, (28) 457.

Tetranychus—

- bimaculatus—
 - in greenhouses, (39) 65.
 - notes, (26) 153; (28) 554, 855; (29) 360; (35) 263, 657; (38) 365.
 - on castor bean, (40) 453.
 - remedies, (28) 759.
 - studies, (27) 264; (29) 261; (36) 557.
- bioculatus, notes, (30) 362.
- citri n.sp., description, (36) 261.
- dufour, studies, (35) 254.
- gloveri, notes, (26) 856.
- modestus, notes, (37) 847.
- multidigituli n.sp., description, (38) 63.
- mytilaspidis, occurrence in Oregon, (28) 859.
- n.spp., descriptions, (33) 659; (36) 660.
- pilosus, notes, (26) 254; (33) 659.
- sp., notes, (27) 155; (29) 853.
- spp., life histories and habits, (28) 457.
- spp., notes, (32) 557; (34) 60.
- spp. on cinchona and tea, (40) 656.
- spp., remedies, (31) 549.
- spp., synonymy, (32) 156.
- telarius—
 - distribution, (32) 63.
 - in Ohio, (34) 59.
 - injurious to alfalfa, (38) 558.
 - remedies, (40) 453.
 - studies, (32) 156.
- tiliarum, notes, (29) 58.
- uniunguis n.sp., description, (38) 63.

Tetraphosphate—

- description, (37) 722.
- fertilizing value, (38) 424; (39) 427, 428.

Tetraphosphoric acid ester of inosit, studies, (27) 406.

Tetraplasy, notes, (29) 67.

Tetrastichini, notes, (30) 857.

- Tetrastichodes detrimmentosus* n.sp., description, (31) 355.
- Tetrastichomyia*, new genus, (39) 468.
- Tetrastichopsis prionomeri* n.g. and n.sp., (39) 468.
- Tetrastichus**—
- antiquensis* n.sp., description, (26) 352.
 - asparagi*, life history, (28) 858.
 - asparagi*, notes, (39) 468.
 - asparagi*, parasitism, (31) 458.
 - asparagi*, studies, (33) 658.
 - bruchophagi*, studies, (36) 759.
 - ceroplastides* n.sp., description, (31) 355.
 - coccinellae*, biology, (30) 754.
 - doteni* n.sp., description, (26) 863.
 - gentilei* n.sp., description, (26) 553.
 - giffardianus*—
 - in Hawaii, (38) 659.
 - parasitic on fruit fly, (37) 856.
 - studies, (40) 459.
 - giffardii* n.sp., description, (30) 161.
 - isis* n.sp., description, (39) 566.
 - malacosomae*—
 - n.sp., description, (36) 556.
 - parasitic on tent caterpillar, (37) 667.
 - n.spp., descriptions, (30) 857; (31) 355; (34) 66; (35) 262; (38) 165.
 - ovipransus* n.sp., description, (37) 856.
 - ovivorus* n.sp., description, (26) 353.
 - platensis*, notes, (27) 559.
 - pyrillae* n.sp., description, (38) 556.
 - sp., notes, (27) 558.
 - sp., parasitic on alfalfa weevil, (31) 61.
 - sp., parasitic on star scale, (26) 553.
 - sp., studies, (26) 458; (28) 560.
 - spp., notes, (36) 556.
 - spp., parasitic on fruit flies, (31) 456.
 - xanthomelaenae*, importation into United States, (38) 62.
- Tetriginae* (Acridiinae), notes, (27) 858.
- Tetropium gabrieli* crawshayi, notes, (32) 155.
- Tettigidea*, breeding experiments, (40) 367.
- Tettigonia**—
- bifida*, notes, (27) 859.
 - similis*, notes, (29) 53.
- Teucrium**—
- chamaepestis*, analyses, (33) 466.
 - scorodonia* as affected by light, (29) 526.
- Texas**—
- College, notes, (26) 97, 194, 397; (27) 99; (28) 495, 798; (29) 197; (31) 198, 497, 600, 798; (33) 400, 600, 700; (34) 497; (36) 599, 899; (37) 99, 898; (38) 800.
 - fever—
 - control in Kentucky, (39) 679.
 - disease resembling, (32) 781.
 - etiology and treatment, (31) 85; (35) 884.
 - immunization, (27) 184; (28) 882; (31) 883; (32) 476; (38) 787.
 - in Australia, (30) 82.
 - in Honduras, (27) 171.
 - in Turkey, (38) 183.
 - nature and treatment, (27) 384.
 - notes, (27) 81, 475, 576; (29) 256; (30) 884; (39) 81, 84, 492.
 - studies, (35) 77.
 - tick, *see* Cattle tick.
 - treatment, (27) 384; (29) 658; (30) 282; (32) 682; (36) 384.
 - Station—
 - and substations, appropriations asked for, (32) 796.
 - financial statement, (29) 696.
 - notes, (26) 97, 194, 495, 600, 900; (27) 99; (28) 398, 798; (29) 600; (31) 798; (32) 498, 696; (33) 400, 600, 700; (34) 396, 798; (36) 599; (37) 99, 600, 898; (38) 800; (39) 698; (40) 99.
 - report, (32) 291; (34) 494; (36) 396; (39) 499.
 - report of director, (29) 696.
 - Stations, needed appropriations for, (28) 796.
- Textile**—
- fibers—
 - bibliography, (31) 196.
 - chemical technology of, treatise, (32) 308.
 - from *Epilobium angustifolium*, (32) 509.
 - methods of analysis, (27) 205.
 - industry of the world, (40) 827.
 - law, need for, (30) 666.
 - mills, artificial humidification in, (31) 70.
 - plant fibers, check list, (38) 637.
 - Textile**—Continued.
 - plant fibers, strength of, (29) 312.
 - plants, treatise, (34) 829.
- Textiles**—
- choosing, (31) 394.
 - handbook, (30) 598.
 - notes, (32) 597.
 - of ancient America, (38) 167.
 - prices in India, (30) 896.
 - removal of stains from, (38) 114.
 - retting, (38) 715.
 - testing, constant temperature and humidity, room for, (38) 414.
 - "Textilose" from paper pulp, (38) 208.
 - Thalia divaricata*, culture for wild ducks, (33) 251.
 - Thamnotettix geminatus*, notes, (27) 859.
 - Thaenoclerus girodi*—
 - larva, description, (40) 759.
 - notes, (29) 359.
 - Thea**—
 - spp., stomata of, (36) 223.
 - 22-punctata, notes, (36) 754.
 - Thecabius**—
 - populicaulis, notes, (34) 453.
 - spp., notes, (31) 351.
 - Thecodiplosis mosellana*—*see also* *Diplosis tritici* and *Wheat midge*.
 - description, (28) 657.
 - in Ontario, (40) 653.
 - Thecopsoira pirolae*, overwintering, (33) 647.
 - Theileria parva*—
 - development, (26) 882.
 - morphology and biology, (28) 478.
 - notes, (34) 384.
 - Theileriosis* in Russian Turkestan, (37) 374.
 - Theisoa constrictella*, life history, (33) 655.
 - Thelephora**—
 - lichenicola, notes, (28) 556.
 - pedicellata, notes, (27) 445; (28) 545.
 - Thelia bimaculata*—
 - life history, (34) 255.
 - notes, (26) 148.
 - Themeda* spp., notes, (26) 362.
 - Theobroma cacao*—
 - character and habits, (35) 730.
 - insects affecting, (26) 354.
 - Theobromin**—
 - determination in cocoa and chocolate, (37) 312.
 - in tea, (31) 358.
 - Theophila* spp., notes, (27) 456.
 - Theophyllin* in tea, (31) 358.
 - Therapeutic agents**—
 - handbook, (31) 478.
 - newer, notes, (26) 580.
 - Therapeutics**—
 - biological, notes, (33) 876.
 - for veterinarians, textbook, (32) 79.
 - papers on, (29) 676.
 - physiologic principles in, (29) 500.
 - review of literature, (32) 678.
 - Therapy, infection, and immunity**—
 - textbook, (38) 781.
 - treatise, (33) 476.
 - Thercladodes kraussi*, studies, (28) 757.
 - Thereva* sp. as a rye pest, (38) 557.
 - Theridion* spp., notes, (29) 256.
 - thermal regions of the globe, (32) 25.
 - Thermobia domestica*, notes, (37) 255.
 - thermodynamics of the atmosphere, (32) 210.
 - thermograph, differential, description, (30) 17.
 - thermoisopleths for Washington, D. C., (33) 320.
 - Thermometer**—
 - exposure, uniform, (34) 118.
 - history and use, (32) 210.
 - Kata, notes, (36) 419.
 - use in cookery, (31) 359.
 - Thermometers**—
 - incubator, tests, (36) 770.
 - shade, teste (30) 17.
 - Thermometric scales, revision, (38) 811.
 - Thermo-osmose in soils, (34) 216.
 - Thermoprecipitin reaction—
 - notes, (31) 878.
 - aero-diagnostic value, (27) 86.
 - Thermopsis lanceolata*, carotinoid content, (31) 803.
 - Thermotox of cotton in Egypt, (30) 526.
 - Thermotropism of roots, (31) 728; (32) 222.
 - Therion**—
 - flavicans, parasitic on gipsy moth, (31) 652.
 - fulvicens, notes, (26) 863.

- hersilochus conotracheli*—
 notes, (27) 864.
 studies, (35) 857.
- Thespesia*—
 glands of, (39) 431.
 populnea, fertilizing value, (29) 215.
- Thevetia nerifolia*, notes, (27) 862.
- Thielavia*—
 basicola—
 as root parasite of watermelon, (33) 852.
 conidial characters and behavior, (35) 247.
 description and treatment, (31) 448, 840.
 host plants, (36) 349.
 infection experiments, (28) 547.
 notes, (26) 551, 849; (27) 45, 249; (29) 245, 549,
 650, 753; (30) 649; (33) 744; (36) 50; (37) 38.
 on beans, (36) 248.
 relation to sweet pea streak disease, (32) 446.
 resistance of tobacco to, (31) 448.
 studies, (35) 547; (36) 845; (37) 155.
 tobacco resistant to, (36) 349.
 treatment, (32) 545; (36) 50.
 temperature relations, (39) 854.
- Thielaviopsis*—
 ethacetica, notes, (29) 650; (34) 841; (38) 354,
 758.
 paradoxa—
 notes, (26) 145; (29) 345, 647; (30) 541; (31)
 844; (36) 541; (37) 452, 652; (38) 350, 758,
 851; (39) 849; (40) 47, 751.
 on sugar cane, (40) 157.
 relation to temperature, (33) 545.
 sp., notes, (28) 241.
- Thimbleberry*—
 crossing with raspberry, (36) 442.
 rust, notes, (33) 647.
- Thiobarbituric acid*—
 as precipitant for furfural, (36) 318.
 as qualitative reagent for ketohexose, (37) 206.
 with aromatic aldehydes, (36) 313.
- Thiocarbamid*, nitrification rate, (32) 124.
- Thiophene* test for lactic acid, (40) 114.
- Thioplaca ingrata*, studies, (28) 826.
- Thiospirillum jense* and its reaction to light
 stimulus, (35) 431.
- Thiosulphate*—
 determination, (35) 804.
 determination in presence of sulphites, (31) 15.
 fertilizing value, (29) 521.
- Thiothrix* spp., investigations, (28) 728.
- Thiovulum* n.g. and n.sp., studies, (30) 133.
- Thirst, physiological basis, (40) 767.
- Thistle*—
 butterfly, notes, (32) 651.
- Canada—
 control, (40) 339, 430.
 destruction, (30) 236, 639; (34) 736.
 distribution and destruction, (29) 538.
 host of *Heterodera radiclecola*, (31) 642.
- Russian—
 analyses, (28) 464.
 as forage crop, (38) 634.
 as silage crop, (38) 669; (39) 134.
 eradication, (27) 733; (32) 134.
 water requirement, (32) 127.
 rust, description, (31) 153.
 rust, notes, (36) 48.
- Thistles*—
 analyses, (30) 565.
 coccinellids affecting, (33) 256.
 eradication, (26) 538; (39) 744.
- Thitsi* tree and its oleoresin, (38) 247.
- Thlaspi arvense*—
 dissemination by farm animals, (26) 839.
 notes, (28) 46; (36) 442.
- Thomas*—
 meal, notes, (26) 126.
 slag, see Phosphatic slag.
- Thomomys*—
 bottae, susceptibility to plague, (26) 59.
 jacintus n.sp., description, (33) 152.
 revision, (34) 449.
- Thorium*—
 content of earth's crust, (34) 619.
 effect on permeability, (34) 34.
 effect on plant cells, (27) 826.
 emanations in soils, (27) 418.
 in soils of United States, (31) 418.
 X, effect on plant growth, (29) 131.
- Thorn skeletonizer in New York, (38) 60.
- Three-days' fever, notes, (37) 460.
- Threshing*—
 machine—
 fires, cause, (32) 86.
 fires, notes, (32) 386.
 hand, description, (29) 87.
- machines—
 cooperative ownership, (34) 392.
 description, (30) 488.
 dissemination of smut by, (31) 148.
 dust explosions and fires in, (35) 688.
 electrically driven, tests, (31) 188.
 exhaust fans for, (40) 49, 746.
 notes, (30) 89.
 operation, (39) 793.
 steam v. electricity for, (28) 685.
 tests, (27) 485; (30) 892; (34) 891.
 power for (28) 591; (29) 892; (30) 590.
 with electricity, (32) 282.
- Thricolepis inornata*, notes, (32) 651.
- Thripheps insidiosus*, notes, (28) 457.
- Thripoctenus*—
 brui, description, (31) 853.
 nubilipennis n.sp., description, (35) 756.
- russelli—
 in England, (32) 348.
 n.g. and n.sp., description, (26) 863.
 notes, (28) 250.
 parasitic on Thysanoptera, (26) 858.
 studies, (27) 262.
- Thrips*—
 affecting oats, (27) 452.
 attacking French beans, (38) 258.
 cortices, validity, (34) 550.
 flava as a carnation pest, (26) 347.
 injurious—
 in British Guiana, (36) 252.
 to alfalfa, (29) 252.
 to grapes, (28) 354.
 to oats, (31) 351.
 new species, (26) 553.
 new species, description, (37) 258.
 new species, in America, (34) 61.
 notes, (27) 356, 857; (28) 654; (29) 252; (30) 250,
 658; (31) 155; (32) 56, 753.
 of British Guiana, (40) 163.
 of Trinidad, notes, (40) 649.
 oryzae n.sp., description, (35) 357.
 outbreak in orchards, (32) 755.
 pisivora, notes, (32) 848.
 pollination of beets by, (31) 549.
 red-banded, studies, (28) 353.
 relation to nonsetting of fruits and seeds, (34)
 355.
 remedies, (27) 357.
 sp. affecting tobacco in Java, (31) 249.
 tabaci, see Onion thrips.
- Thromboplastin*—
 hemostatic action, (36) 576.
 rôle of in coagulation of blood, (26) 580.
- Thrusidae* of Brazil, (35) 261.
- Thrushes*—
 economic importance, (31) 349.
 feeding habits, (28) 450; (34) 59.
- Thrypticus mühlenbergiae* n.sp., life history, (30)
 253.
- Thuarea involuta*, notes, (26) 362.
- Thuja occidentalis*, wood structure, (27) 147.
- Thunder*—
 and hail in region of Paris, (36) 208.
 distance heard, (38) 210.
 in Paris region, (36) 719.
 Mountain, devastated condition, (40) 841.
 notes, (32) 810.
- Thunderbolt beetle*, notes, (28) 653.
- Thunderstorm*—
 at Charleston, S. C., (30) 417.
 at Macon, Ga., (29) 812.
 at Washington, D. C., (29) 812.
 in Trinity Co., California, (38) 511.
- Thunderstorms*—
 effect on milk, (32) 873.
 forecasting, (34) 614; (35) 808.
 in Kansas, (29) 510, 721.
 in United States, (34) 117, 615.
 notes, (32) 24.
 studies, (28) 788.
- Thurberia thespesioides*—
 as host plant of cotton boll weevil, (29) 458; (30)
 56.

Thurberia thespesioides—Continued.

- description, (31) 633.
- distribution, (33) 257.
- insects affecting, (31) 350; (33) 57.

Thuya—

- orientalis*, description and culture, (30) 346.
- plicata*, damaged by squirrels, (26) 552.

Thymol—

- as milk preservative, (32) 576.
- as vermifuge, (38) 884.
- chloroform, effect on chlorin content of urine, (40) 614.
- content of horsemint and ajowan seed, (39) 712.
- effect on hyacinths and tulips, (26) 731.
- production from horse mint, (35) 344.

Thymolsulphophthalein as an indicator, (39) 807.

Thymus—

- gland as affected by X-rays, (38) 268.
- gland, pathology, (27) 576.
- tissue, cleavage by normal serum, (31) 378.

Thyreocoris pulicarius on artichoke, (40) 58.

Thyridaria tarda—

- injurious to rubber, (26) 451.
- notes, (27) 451; (28) 149, 241; (29) 548, 647, 749; (33) 741; (34) 540, 744; (35) 45, 251, 353; (36) 347, 852; (38) 354.
- on sugar cane, (40) 157.
- on tea roots, (37) 52.
- relation to rubber spotting, (29) 451.

Thyroid—

- feeding, effect on carbohydrate metabolism, (39) 69.
- feeding, effect on catalase content of tissues, (38) 870.
- gland—
 - active constituent, (37) 65; (39) 803.
 - as affected by diet, (26) 159.
 - effect on nitrogenous metabolism in sheep, (32) 562.
 - enlarged, in swine, (40) 185.
 - extract, effect on milk production, (37) 173.
 - iodin in, (34) 580.
- hyperplasia, (39) 187.
- secretion, relation to metabolism, (29) 868.

Thyro-parathyroid, importance in carbohydrate assimilation, (30) 464.

Thysanoptera—

- anatomy and feeding habits, (34) 355.
- antennal antigenin, (34) 356.
- British, notes, (37) 257.
- classification, (33) 556.
- generic names, (31) 351.
- head and mouth parts, (33) 653.
- internal parasite of, (26) 858.
- locality and food plant records, (31) 550.
- new, from West Africa, (35) 255.
- new, in America, (34) 62.
- new, in California and Georgia, (26) 553.
- new, in United States, (36) 253.
- notes, (27) 757.
- of Cuba, (40) 453.
- Florida, (40) 353.
- France, (29) 853.
- Plummer's Island, Maryland, (37) 561.
- St. Vincent, (39) 558.

Thysanosoma actinoides—

- infestation of lambs by, (37) 374.
- life cycle, (39) 162.
- morphology, (30) 584.
- notes, (27) 182.
- treatment, (28) 80.

Thysanura, destructive to cattle ticks, (28) 758.

Tick—

- bird, red beaked, notes, (29) 585.
- bite in livestock, treatment, (31) 679; (36) 678.
- destroying agents, tests, (27) 476.
- infestation in Natal, (29) 585.
- infesting turkeys, (33) 354.
- paralysis, notes, (30) 182; (31) 656; (32) 274; (36) 180, 275.
- paralysis, studies, (32) 877.
- pyemia, notes, (38) 755.

Ticks—see also Cattle tick.

- affecting big game, (38) 487.
- affecting horses, (27) 356.
- as affected by dipping, (34) 186.
- as affected by Roentgen rays, (28) 57.
- as carriers of *Dermatobia hominis*, (40) 62.
- biology, (34) 857.

Ticks—Continued.

- brown, remedies, (27) 476.
- brown, transmission of amabeke by, (26) 882.
- Canadian, review of literature, (35) 858.
- control—
 - in Antigua, (31) 679.
 - in Dutch East Indies, (40) 682.
 - in South Africa, (28) 181.
 - relation to Rocky Mountain spotted fever, (26) 63.
- destruction, (31) 356.
- destruction by arsenical dips, (29) 886.
- diseases transmitted by, (34) 576; (40) 587.
- distribution of spirochetes in, (31) 81.
- eradication, (28) 759; (29) 585; (31) 182; (32) 81, 251, 274; (33) 679; (34) 184, 185, 273; (36) 675; (37) 477; (38) 179; (39) 679; (40) 880.
- eradication—
 - effect on cattle industry of the South, (31) 883.
 - in South Africa, (26) 153.
 - in the South, (29) 500.
 - laws and regulations, (37) 881.
- iguana, studies, (40) 359.
- in Brazil, (27) 361.
- British Museum, (37) 560.
- New South Wales, (30) 684.
- New Zealand, (39) 567.
- Queensland, (27) 552.
- West Indies, (27) 460; (30) 857.
- infesting domestic animals in Russian Turkestan, (37) 360.
- infesting marmots, (37) 879.
- inflammation following bite of, (29) 585.
- monograph, (35) 263.
- new species, descriptions, (26) 460.
- North American, life histories, (29) 861.
- notes, (27) 53, 361; (31) 79.
- of Barbados, (40) 56.
- Belgian Congo, (35) 366.
- Nigeria, (34) 851.
- Paraguay, (38) 468.
- Uganda, (34) 549.
- Pajaruelo, life history and biting habits, (35) 662.
- parasite of, (30) 255.
- protozoan parasites transmitted by, (37) 481.
- relation to—
 - African Coast fever, (29) 584.
 - anaplasmosis, (26) 584; (29) 584.
 - loup-ill (37) 277; (40) 384.
 - spirochetosis, (29) 883.
 - spirochetosis in fowls, (26) 684.
 - verruca fever, (29) 262.
- remedies, (29) 680.
- rôle in disease transmission, (26) 153.
- salivary secretion, (32) 557.
- sources of infections from, (26) 460.
- spinose ear, notes, (40) 656.
- spinose ear, remedies, (40) 682.
- spotted fever, eradication, (27) 479.
- spotted fever, in Montana, (39) 265.
- studies, (27) 865.
- summary of information, (39) 768.
- transmission of—
 - African Coast fever by, (26) 882.
 - Anaplasma marginale by, (26) 173.
 - gall sickness by, (26) 883.

Tiger beetles of Indiana, studies, (39) 767.

Til wilts, studies, (38) 547.

Tile—

- cement, curing, (27) 586.
- cement, solubility, (31) 92.
- clay and concrete, tests, (32) 482, 483.
- concrete—
 - construction, (34) 685.
 - drain, failures of, (29) 487.
 - durability in alkali soils, (34) 584.
 - tests, (26) 685; (32) 84.
- drainage—
 - and sewer, beddings for, (37) 187.
 - cost, (32) 481.
 - in Illinois, (27) 484.
 - investigations, (28) 890.
 - machine for testing, (31) 384.
 - manufacture and use, (28) 890.
 - notes, (27) 386.
 - specifications, (29) 290; (37) 587.
 - specifications and tests, (27) 587.

Tile—Continued.

- drainage—continued.
 - system, (37) 286.
 - tests, (29) 655; (30) 787; (33) 392.

drains—

- design and construction, (32) 187.
- tables for computing cost, (32) 85.
- methods of testing, (27) 87, 88.

Tilefish, occurrence and use, (34) 557.

Tilia—

- americana as a medicinal plant, (30) 145.
- europa, hydrocarbons in, (26) 107.
- of North America, (40) 248.

Tiling contracts, notes, (27) 789.

Tillage—

- deep, in the Great Plains, (39) 812.
- effect on bacteria in peat soils, (38) 420.
- experiments at Grignon, France, (35) 688.
- experiments in New South Wales, (26) 135.
- machinery, recent inventions in, (35) 494.
- machines, description, (33) 489, 891.
- methods for western Nebraska, (35) 438.
- new basis for, (29) 516.
- notes, (36) 511.
- relation to soil moisture, (27) 320.

Tillandsia recurvata, anatomy and biological aspects, (26) 729.

Tilletia—

- carles, detection in flour, bran, and cereals, (26) 408.
- controversa, notes, (34) 843.
- foetens—
 - inoculation experiments, (33) 245; (37) 750.
 - morphology, (35) 845.
 - spore germinations of, (31) 642.
 - studies, (38) 645.
 - treatment, (26) 447; (29) 750.
- horrida, notes, (35) 243, 247; (37) 247.
- horrida, studies, (30) 540, 845.
- levis, notes, (29) 243; (34) 644, 845.
- on wheat, studies, (40) 345.
- spores, effect on domestic animals, (27) 882.
- spp., chemical composition, (26) 746.
- spp., effect on pigs, (26) 888.
- spp. in Argentina, (38) 148.
- spp. in Bohemia, (35) 650.
- tritici—
 - nature and treatment, (32) 145.
 - notes, (33) 851; (34) 644, 845; (38) 48, 548.
 - studies, (29) 152; (34) 644.
 - treatment, (28) 745; (37) 247.

Timber—see also Lumber and Wood.

- absorption of water by, (32) 48.
- aeroplane, rots and defects, (40) 349.
- air-seasoning of, (30) 347.
- antiseptic treatment, (27) 148; (39) 452,
- as affected by forest fires, (31) 538.
- Austrian, tests of strength, (28) 744.
- available for turpentine operations, (33) 543.
- beam design, tables for, (34) 889.
- beetles, notes, (32) 552.
- bibliography, (28) 439.
- bolted joints in, tests, (35) 888.
- borer in New Zealand, (40) 169.
- borers affecting, (29) 761.
- conditions—
 - along Hudson Bay Railway, (26) 643.
 - around Lesser Slave Lake, (27) 646; (31) 839.
 - in southeastern Manitoba, (31) 839.
- construction, of Philippines, (26) 51.
- cost of growing, (26) 49.
- cost of logging, (35) 843.
- creosoted, tests of strength, (28) 590.
- cut, regulating, Swiss method, (37) 451.
- decay, notes, (35) 252.
- decay, prevention, (33) 444; (37) 349.
- dry rot in, (28) 750, 751; (29) 157; (30) 850; (32) 845; (34) 751; (37) 253; (39) 153.
- dry rot, treatment, (33) 151.
- durability, (35) 147.
- estimates, computing, (35) 44.
- estimating—
 - errors in, (31) 341.
 - formula method, (40) 843.
 - in eastern North Carolina, (37) 747.
 - in southern Appalachians, (37) 46.
 - volume tables for, (35) 147.
- farm, marketing, (40) 344, 743.
- fire-killed, insects affecting, (29) 53.
- foreign, culture in Mecklenburg, (30) 645.

Timber—Continued.

- frame structures, design and construction, (37) 386.
- grading, (37) 245.
- growing for mining purposes, (38) 543.
- hardwood, as affected by forest fires, (29) 44.
- hardwood, of New South Wales, (27) 43; (28) 51, 441.
- identification, (38) 645.
- immature, valuation of damages, (38) 645; (40) 843.
- imports into India, (38) 751.
- industry—
 - aid of science in, (39) 450.
 - in Canada, (26) 242, 544; (28) 644; (36) 644.
- insects affecting, (27) 453; (28) 247; (37) 356.
- Irish, production and value, (33) 50.
- joints, tests, (31) 458.
- lagscrewed joints in, tests, (35) 889.
- lands of Panama, (29) 342.
- laws in United States, (36) 644.
- marking for cutting, (34) 641.
- measurement, (27) 846.
- measurement, diagram for, (36) 590.
- microscopic identification, (37) 46.
- mine, preservation, (33) 845.
- mine, tests, (31) 144.
- National Forest, sale of, (29) 444.
- of Africa and British Guiana, (32) 47.
- British Guiana, (31) 743; (32) 144.
- British North Borneo, (36) 244.
- Canada, (34) 239; (37) 245.
- Eritrea, (34) 440.
- Great Britain, manual, (36) 746.
- India, (36) 539.
- India, seasoning tests, (40) 843.
- Japan, growth data, (33) 844.
- New South Wales, (34) 152.
- New South Wales, tests, (27) 348; (40) 640.
- Queensland, (37) 650.
- Russia, (35) 451.
- South America, (34) 306.
- tropical forests, (39) 245.
- Papuan, tests, (28) 239.
- pests, notes, (26) 59.
- physics, experiments in, (26) 141.
- preservation, (26) 241; (27) 314, 443; (28) 442, 590; (31) 538; (35) 544; (34) 240; (35) 241, 843; (36) 590; (37) 886; (38) 248, 249.
- preservation, papers on, (36) 45.
- preservation, textbook, (33) 243.
- preservatives, analyses, (27) 443.
- protection against fungus injury, (26) 544.
- protection from Merulius lacrymans, (28) 246.
- regulations for National Forests, (26) 340.
- reproduction, relation to grazing, (29) 543.
- resistance to termites, (30) 536, 754.
- resources of—
 - Iowa, (30) 46.
 - Oregon, (38) 544.
 - South Dakota, (37) 790.
 - Utah, (37) 791.
- rot, studies, (32) 845.
- rots, descriptions, (35) 755.
- sale in National Forests, (27) 543.
- scale, description, (30) 347.
- scaling and measurement, (36) 644.
- seasoning, (31) 840.
- second growth, determining profits in, (34) 641.
- slash or brush, rotting, (36) 844.
- small, marketing in Wisconsin, (40) 154.
- square, industry in Canada, (30) 46.
- standing—
 - determination of quality, (37) 243, 451.
 - in United States, (30) 844.
 - insects affecting, (26) 560.
 - measurement, (35) 847.
- stands, effect on soil physics, (26) 140.
- strength as affected by seasoning, (27) 43.
- strength tests, (28) 50.
- structural—
 - in United States, (35) 240.
 - preservation experiments, (33) 845.
 - strength values, (26) 443.
- supply of China, treatise, (33) 50.
- supply of Union of South Africa, (40) 448.
- tables, Biltmore, booklet, (28) 644.
- tests, (31) 538.
- trade of United Kingdom, (31) 744.
- treating plants, management, (26) 644.

Timber—Continued.

- treatise, (34) 537.
- trestle, prolonging life of, (30) 47.
- unit stresses for, (36) 91.
- western, tests, (37) 90.
- yellow pine, tests of strength, (29) 387.

Timberland—

- reforestation, (40) 744.
- yield graphs, (39) 352.

Time zones at sea, (38) 812.

Timeromicrus maculatus, studies, (40) 862.

Timothy—

- analyses, (27) 35; (32) 171.
- and clover, fertilizer experiments, (40) 134.
- and clover, seeding experiments, (40) 231.
- and clover yields, (40) 732, 735.
- Arlington, notes, (37) 195.
- as affected by—
 - calcium and magnesium, (35) 726.
 - companion crop of clover, (37) 438.
- as forage crop, (31) 829.
- billbug, notes, (29) 252.
- breeding experiments, (27) 535; (29) 635; (32) 431, 532; (34) 34; (35) 232; (39) 334.
- composition—
 - and digestibility, (36) 469.
 - as affected by irrigation, (28) 332.
 - as affected by leafhoppers, (35) 552.
 - at different stages, (30) 137; (39) 836.
 - during growth and ripening, (35) 738.
- cost of production, (32) 527, 688; (34) 137; (35) 691.
- culture, (37) 540; (39) 742.
- culture—
 - experiments, (28) 431, 532; (29) 631, 735; (30) 228; (32) 431, 528, 529, 530; (33) 830; (34) 34; (35) 133, 825; (39) 737; (40) 136.
 - in the Ozarks, (29) 427.
 - on irrigated land, (27) 643.
 - under dry farming, (33) 632.
- digestibility, (32) 168.
- diseases, notes, (39) 532.
- dissemination by insects, (27) 47.
- effect on—
 - ammonification in soils, (29) 317.
 - following crop, (40) 623.
 - nitrate content of soils, (29) 818.
 - nitrification in soils, (29) 317.
- ergot in Indiana, (39) 52.
- fertilizer experiments, (26) 323; (27) 321, 324; (28) 724; (30) 326, 829; (32) 431; (33) 226, 831; (35) 220, 520; (37) 540, 627; (38) 220, 620.
- field tests, (39) 135.
- flowering habits, (37) 140.
- for irrigated pastures, (39) 434; (40) 432.
- germination studies, (32) 231.
- graphic summary of seasonal work, (39) 495.
- growth on volcanic ash, (32) 36.
- growth with legumes, (33) 527.
- hay—
 - amylolytic activity, (32) 503.
 - analyses, (31) 437; (36) 65.
 - as affected by maturity, (26) 265.
 - ash analyses, (29) 861.
 - cost of production, (28) 594; (30) 333.
 - digestibility, (26) 266; (39) 166.
 - effect of maturity on, (35) 737.
 - effect on bacterial activity of soils, (35) 216.
 - effect on melting point of milk fat, (37) 73.
 - energy value, (33) 72.
 - feeding value, (39) 168, 269.
 - loader for, (39) 231.
- history and culture, (35) 232.
- history of, (33) 235.
- improvement, (26) 196; (28) 194.
- infection by *Puccinia graminis*, (35) 847.
- insects affecting, (39) 532.
- irrigation experiments, (28) 130, 133, 332; (32) 224.
- leaf smut, studies, (36) 247, 543.
- liming experiments, (32) 31; (34) 133; (39) 737; (40) 125.
- meadow plant bug, studies, (40) 260.
- moisture content and shrinkage, (34) 828.
- notes, (31) 830.
- on bog and moss soils, (40) 212.
- palatability, (34) 865.
- pollination experiments, (37) 735.
- relative yielding capacity, (40) 625.
- root systems of, (35) 639.

Timothy—Continued.

rust—

- description and treatment, (27) 445.
- infection experiments, (34) 244.
- studies, (26) 52; (28) 53; (31) 344.
- wintering in Wisconsin, (32) 51.

seed—

- analyses, (26) 739.
- germination and purity tests, (29) 741.
- germination tests, (34) 143.
- high v. low grade, (26) 838.
- hulled, germination, (27) 838.
- inspection in Maryland, (36) 442.
- longevity, (32) 634.
- standards in Canada, (26) 839.
- tests, (27) 142.
- treatment, (39) 238.
- vitality, (27) 740.
- seeding on ranges, (29) 531; (30) 35.
- time of cutting, (39) 633.
- transpiration, (39) 517.
- utilization of sugar by, (36) 125.
- variation in composition, (27) 499.
- variations in, (35) 232.
- varieties, (27) 535, 736; (29) 139.
- variety, new, tests, (39) 633.
- variety tests, (40) 232.
- vitamin content, (40) 564.
- yields, (29) 631; (39) 333, 337, 435; (40) 733.

Tin—

- absorption and fate of in the body, (31) 362.
- adsorbed, effect on digestion of proteins, (37) 470.
- adsorption by proteins, (37) 12.
- as affected by organic acids of canned goods, (26) 867.
- coating on food containers, (37) 715.
- determination, (37) 110.
- determination in foods, (26) 99; (27) 498; (32) 298.
- determination in tinplate, (27) 505.
- food containers, disappearance of oxygen in, (28) 361.
- hydrates, effect on guinea pigs, (28) 362.
- in canned foods, (33) 661.
- metallic, effect on *Aspergillus niger*, (30) 824.
- poisoning from canned asparagus, (31) 67, 461.
- presence in canned goods, (28) 461.
- salts in canned foods, (26) 66.
- solution by canned foods, (37) 12.

Tincture plants, treatise, (36) 142.

Tinea—

- cloacella, studies, (36) 156.
- granella, notes, (33) 252.
- oleae, notes, (27) 357.
- pellionella, see *Clothes moth*.
- Tineid moths of Central America, (35) 464.
- Tineina of North America, life histories, (33) 655.

Tineola biselliella—

- life history, (38) 657.
- predacious, (38) 557.

Tineopsis theobromae n.g. and n.sp., notes, (30) 550.

Tingidae—

- American, notes, (38) 158.
- nearctic, names, (38) 559.

Tingis pyri—

- biology, (38) 559.
- notes, (27) 453.

Tingitoidea of Ohio, (36) 755.

Tiphia—

- inornata, life history and ecology, (32) 352.
- parallela—
 - establishment in Antigua, (38) 256.
 - establishment in Mauritius, (38) 467.
 - feeding habits, (40) 265.
 - notes, (28) 752; (32) 449; (34) 455.
- spp., parasitic on May beetles, (31) 458.

Tipula—

- oleracea injurious to rice, (33) 555.
- oleracea, notes, (32) 851.
- paludosa, biology and economics, (37) 763.
- simplex, notes, (28) 160.
- spp., of North America, (31) 551.

Tipulid larvae in decayed prune wood, (32) 652.

Tipulidae—

- North American, biology, (32) 153; (33) 561; (35) 57.
- oriental, revision, (27) 358.
- Tiqui-tiqui, notes, (31) 258.

- Tires**—
width in relation to load, (33) 782.
width of, (36) 787.
- Tischeria camplanella**, studies, (28) 560.
- Tissue**—
cells, human, resistance to germicides, (37) 176.
culture method in immunity studies, (40) 179.
extracts, selective extraction of sensitive substances from, (40) 611.
invasion by *Plasmodiophora brassicae*, (40) 50.
living, methods of study, (29) 408.
living, oxidation processes in, (30) 201.
mechanical, formation in plant tendrils, (27) 631.
transplantation—
and anaphylaxis, (38) 182.
and immunity, (33) 583; (39) 487, 886; (40) 578.
negative, cause, (37) 478.
- Tissues**—
caseation by tubercle and other bacilli, (33) 480.
chemical functions, (28) 201.
cultivation outside the body, (28) 272.
imbibition heat in, (30) 368.
lecithin content, (31) 577.
mammalian, growth in vitro, (33) 267.
regeneration and transplantation, (28) 68.
- Tit**, bush, destructive to codling moth, (27) 559.
- Titanium**—
concentration in subsoil, (31) 720.
distribution in loam soils, (31) 618.
in pineapple soils, (29) 210.
in plants, (38) 409.
- Titlarke**, destruction of grain aphids by, (29) 453.
- Titmice**, destructive to codling moth, (27) 559.
- Titrating table**, portable, description, (34) 312.
- Titration flask**, description, (37) 614.
- Titrations**, alkalimetric and acidimetric, treatise, (33) 109.
- "T" Kirriemoor** roots as substitute for yeast, (29) 461.
- Tmetis muricatus**, destruction by *Coccobacillus acidiorum*, (33) 154.
- Tmetocera ocellana**, *see* Bud moth.
- Toads**—
California, economic status, (32) 244.
eating of alfalfa weevil by, (31) 655.
of Long Island, (32) 448.
of Pennsylvania, (31) 648.
- Toadstool poisoning**, treatment, (27) 329.
- Toadstools**—
and mushrooms, handbook, (31) 628.
notes, (28) 861.
- Tobacco**—
alkaloid formation in, (35) 333.
analyses, (29) 866.
animals affecting, (29) 551.
ants affecting, (30) 759.
aphis, notes, (40) 355.
arsenic in, (31) 715.
artificial drying, (37) 417.
as affected by shade, (31) 326; (33) 521.
ash, composition, (39) 607.
ash, composition as affected by fertilizers, (37) 541.
bacterial disease—
notes, (29) 423; (31) 127, 539.
studies, (30) 747.
barium in, (30) 502; (31) 715; (36) 202.
barns, plans and specifications, (28) 787.
"bassara" or "verderame", description, (26) 748.
beetle—
as affected by Roentgen rays, (35) 554.
control in Philippines, (38) 459.
life history and remedies, (38) 61.
notes, (26) 560.
remedies, (35) 856.
studies, (40) 758.
biochemistry, (37) 509.
biometrical studies, (27) 341.
black rot, notes, (30) 450; (37) 51.
black rot, treatment, (31) 840.
black rust, notes, (32) 240.
black rust, studies, (31) 149.
blackleg or canker, studies, (31) 448.
blossom color inheritance, (40) 442.
blue mold in, (33) 147; (39) 551.
- Tobacco**—Continued.
breeding, (29) 538; (30) 836; (31) 138.
breeding experiments, (26) 133; (27) 838; (28) 138; (29) 536; (30) 530; (32) 220; (33) 331; (34) 141; (35) 139; (38) 238, 526, 634.
breeding in Dalmatia, (33) 137.
budworm, studies, (37) 663.
Burley, culture, (35) 534.
Burley, marketing, (35) 792.
burning quality, (36) 311.
burning quality—
as affected by alkali salts, (39) 34.
determination, (33) 316.
studies, (38) 139, 140, 238, 239.
"carotting", (40) 442.
caterpillar in Philippines, (30) 252.
chemistry of, (33) 508.
chemistry, progress in, (29) 413.
cigar—
filler, breeding, (27) 838.
leaf, culture, (27) 37.
leaf, curing by artificial heat, (27) 238.
wrapper, burning quality, (33) 316.
wrapper, culture in Philippines, (37) 339.
coleopteran pest, (40) 170.
composition, (33) 637.
composition—
and quality as affected by fertilizers, (33) 732.
as affected by shade, (30) 430.
at various stages of growth, (33) 436.
correlation and inheritance in, (27) 535.
cost of production, (27) 238; (31) 530; (37) 191, 226.
critical period of growing season, (39) 811.
crop of 1912, (28) 638.
Cuban, classification, (34) 431.
Cuban types, (26) 837.
culture, (29) 538; (30) 140, 440, 737; (31) 524; (33) 734; (37) 37, 541; (39) 834.
culture—
and improvement, (28) 633.
experiments, (26) 233, 422, 638; (27) 638; (30) 133, 229, 442, 632; (31) 733; (32) 137, 431; (34) 141, 142; (35) 135, 532; (36) 32, 513; (37) 734; (38) 137, 238, 336, 526, 527, 634; (39) 128, 229, 632; (40) 230, 332, 524, 735.
for nicotin, (30) 140, 737.
in Albania, (37) 445.
Argentina, (37) 541, 823.
Bihar, (34) 39.
Bosnia, Herzegovina, and Japan, (27) 238.
Brazil, (35) 641.
Burma, (29) 736.
Canada, (29) 233; (35) 534.
Connecticut, (30) 835; (36) 337.
Cyprus, (35) 642; (40) 243.
East Indies, (30) 697; (39) 423.
Egypt, (38) 638.
Gironde, (29) 233.
Guam, (40) 327.
India, (28) 736; (32) 131.
Ireland, (26) 236; (31) 530; (36) 533.
New South Wales, (37) 340.
Nyasaland, (26) 829.
Ohio, (27) 237.
Philippines, (37) 791.
Russia, (28) 46.
Sumatra, (28) 835.
Tennessee, (26) 439.
Uruguay, (37) 445.
relation to rainfall, (33) 715.
curing, (28) 715; (29) 538; (30) 737, 836.
curing—
air and flue processes, (30) 440.
as affected by light, (38) 239.
barn, construction, (35) 890.
barn, description, (30) 140.
chemical changes during, (35) 718.
experiments, (30) 140; (35) 890; (38) 138.
studies, (31) 115.
cutworms affecting, (34) 453.
cytokinesis of pollen mother cells, (40) 518.
decoction, analyses, (33) 735.
Deli, measurements, (32) 831.
Deli, selection experiments, (40) 635.
Deli, sterile dwarf form, (40) 38.
Deli, types of, (33) 436.
dips for scabies in sheep, (26) 587.
disease resistance, (36) 50.

Tobacco—Continued.

- diseases—
 descriptions, (30) 351; (33) 446; (37) 753.
 descriptions and treatment, (31) 448.
 in Dutch East Indies, (31) 540; (37) 553.
 notes, (29) 550; (30) 836; (31) 841; (36) 145; (39) 551; (40) 48.
 notes and treatment, (27) 45.
 studies, (28) 844; (38) 249, 634.
 extract fumigation, (29) 640.
 extraction of nicotine from, (29) 118.
 extracts—
 analyses, (38) 643.
 insecticidal value, (28) 162.
 methods of analysis, (26) 413.
 valuation, (26) 511.
 fermentation, (28) 115; (38) 138, 139, 238.
 fertilizer experiments, (26) 133, 422, 638; (27) 37, 341, 436, 437; (29) 22, 233; (30) 140, 525, 639, 821, 835; (31) 430, 438, 733, 738, 821; (32) 137, 217, 431; (33) 728, 731; (34) 142; (35) 220, 533, 534; (36) 32, 626; (37) 215, 339, 729; (38) 36, 137, 140, 238, 239, 634; (40) 230, 332, 735.
 fertilizer, formulas for, (31) 628.
 fertilizers for, (35) 338.
 flea-beetle, notes, (31) 452.
 flea-beetle, studies, (26) 453.
 flue-cured, culture, (30) 39.
 formation of alkaloids in, (27) 133.
 frog-eye, notes, (30) 47.
 fumigation, (39) 565.
Fusarium mycelium in, staining, (39) 248.
Fusarium wilt, notes, (39) 854.
 German, nicotine content, (26) 333.
 graphic summary of seasonal work, (39) 495.
 green manuring experiments, (29) 215; (31) 230, 233; (36) 624; (37) 734; (38) 137.
 growers' cooperative society in Kentucky, (28) 88.
 growing centers of Canada, (26) 639.
 growing for nicotine purposes, (26) 738.
 growing with corn for shade, (40) 229.
 growth as affected by—
 soils, (29) 416.
 sulphur, (32) 724.
 gummosis—
 black shank, or bacterial wilt, studies, (30) 541.
 disease resembling, (31) 544.
 studies, (27) 650; (28) 243, 446; (37) 554.
 treatment, (28) 347.
 hail injury to, (35) 734.
 handbook, (40) 442.
 harvesting—
 and curing, (26) 638.
 experiments, (38) 37, 137.
 heredity in, (30) 29, 530.
 Herzegovina, culture in Italy, (27) 37.
 hollow stalk, studies, (31) 448.
 hornworms, remedies, (29) 356; (31) 454; (38) 159.
 hybrid, notes, (27) 239.
 hybridization, (38) 137.
 hybridization studies, (40) 38.
 improvement, (28) 637; (32) 220.
 in bread, (31) 857.
 industry—
 in Australia, (40) 524.
 Clinton County, Pennsylvania, (34) 142.
 Germany, (30) 896.
 Italy, Java, and Sumatra, (30) 229.
 Ontario, (36) 33.
 United States, (28) 235.
 statistics, (40) 533.
 inheritance of disease resistance in, (36) 845.
 injuries and diseases in Dalmatia and Galicia, (35) 247.
 insects—
 affecting, (26) 453, 553, 638, 856; (27) 53, 453; (29) 353, 551, 653, 756; (30) 440, 752, 836; (31) 249, 452, 453; (34) 549; (35) 54; (36) 355; (37) 255, 256.
 in Dutch East Indies, (40) 854.
 in Porto Rico, (39) 58.
 insurance against hail, (36) 192.
 irrigation experiments, (38) 238, 239.
 juice, poisoning of cattle by, (30) 577.
 lanas disease, studies, (37) 553, 554; (39) 149.
 "Latakia," production, (40) 243.
 leaf curl, notes, (30) 848.
 leaf folder, studies, (39) 58.

Tobacco—Continued.

- leaf grain of, (36) 311.
 leaf spot—
 angular, (40) 848.
 notes, (36) 348.
 studies, (38) 150.
 leaves and inflorescence as affected by environment, (37) 224.
 leaves, betain in, (28) 109.
 lightning injury, (40) 645.
 lime for, (28) 223.
 liming experiments, (30) 821; (37) 522, 523.
 liquor, analyses, (26) 65.
 malnutrition or overfertilization, (28) 337.
 manganese sulphate for, (26) 126.
 marketing, (28) 638.
 Maryland types, (32) 740.
 Mendelian inheritance in, (27) 239.
 mildew, notes, (37) 453.
 mosaic and allied diseases, (30) 148.
 mosaic, carrier, (40) 251.
 mosaic disease—
 bacterial origin, (37) 549.
 characteristics, (31) 345.
 distribution of virus, (34) 247.
 infection experiments, (32) 643.
 notes, (26) 181; (35) 752; (36) 451.
 review of investigations, (33) 447.
 studies, (28) 649, 746; (30) 450; (34) 52; (35) 751; (36) 647; (37) 150; (38) 49, 649; (39) 456, 549.
 treatment, (35) 653.
 mutation in, (30) 631; (31) 43; (33) 137.
 nicotine content, variation, (27) 830.
 of Java, analyses, (37) 419.
 of Paraguay, (34) 38.
 origin of alkaloids in, (27) 228.
 Orobanchae on, (39) 146.
 parthenocarp and parthenogenesis in, (33) 435.
 phyllodination or string leaves of, (31) 641.
 phylogenetic studies, (33) 435.
 phylogeny of, (35) 436.
Phytophthora disease, notes, (34) 744.
 plant—
 distribution of nicotine in, (26) 333.
 enzymes of, (31) 204.
 nicotine content, (29) 503.
 wastes, nicotine content, (26) 413.
 planting—
 and harvesting dates, (26) 532.
 experiments, (38) 238.
 plants, sealed by Paris green, (34) 351.
 potash fertilizers for, (26) 526.
 press cake, fertilizing value, (37) 411.
 production and use in United States, (27) 739.
 products, analyses, (34) 436.
 relation to climate, (28) 27.
 resin, chemistry of, (32) 713.
 resistance to hydrocyanic acid gas, (31) 747.
 Réunion, in Mauritius, (40) 442.
 root rot—
 notes, (26) 849; (33) 743.
 strains resistant to, (36) 349.
 studies, (35) 547; (36) 845; (39) 854.
 treatment, (31) 840; (36) 32, 50.
 rot bacteria affecting, (29) 345.
 rotation experiments, (33) 731, 828; (36) 829.
 Russian, composition, (28) 46.
Sclerotium disease, studies, (37) 249.
 seed beds, (30) 140; (40) 242.
 seed beds—
 disinfection, (34) 444.
 management, (36) 32; (38) 634.
 preparation, (26) 638; (35) 233.
 steam sterilization, (31) 437; (36) 393; (40) 135.
 treatment for gummosis, (28) 347.
 seed—
 cleaning, (29) 144.
 cleaning and grading, (26) 638.
 germination, (29) 739; (33) 636.
 germination in darkness, (38) 127.
 germination tests, (26) 44.
 inspection, (39) 443.
 leaf, changes in during resweating, (35) 208.
 oil, analyses and use, (37) 411.
 oil, composition, (35) 9.
 planting directly in field, (31) 233.
 production, (31) 138; (32) 740.

Tobacco—Continued.

seed—continued.

- studies, (39) 538.
- treatment, (28) 446.
- seeding device, (38) 137.
- seeding experiments, (31) 438.
- selection experiments, (38) 36, 741.
- self-sterility in, (33) 129.
- shading, (37) 729.
- size inheritance in, (35) 819.
- slug, notes, (40) 56.
- smoke, effect on plants, (26) 230; (27) 254, 830; (29) 30, 131; (34) 30.

- smoke, effect on seedlings, (30) 131.
- smoking qualities, (28) 637.
- smoking tests, (27) 840.
- soils, management, (37) 37.
- sooty mold, studies, (27) 248.
- South African, investigations, (26) 808.
- spacing and topping experiments, (38) 36.
- splitworm, remedies, (33) 351.
- splitworm, studies, (30) 550.
- spot disease, notes, (32) 544.
- stalks as fertilizer, (30) 127.
- statistics, (26) 595, 639; (33) 894.

stems—

- analyses, (34) 521; (35) 128.
- and stalks, analyses and use, (34) 519.
- as vermifuge, (38) 885.
- fertilizing value, (30) 835.
- nematode on, (39) 250.

Stewart Cuban—

- field tests with, (33) 137.
- variety, (31) 334.

suck flies, studies, (39) 58.

suckering, (35) 533.

sun-cured, growing and curing, (27) 436.

tarnished plant bug affecting, (26) 638.

textbook, (33) 235.

thrips affecting, (31) 249.

tokra disease, notes, (36) 449; (38) 351.

topping experiments, (34) 141, 142; (35) 533, 534.

transpiration in, (30) 629.

treatise, (29) 265; (36) 142.

types, (28) 235.

unsatisfactory yields, (36) 628.

utilization of lithium salts by, (28) 527.

variation in, (31) 138; (37) 339.

variation in pure lines, (38) 238.

variation of flower size in, (33) 435.

varieties, (26) 638; (27) 37, 238, 838; (30) 525; (31) 430, 733; (32) 137, 431, 740; (33) 728; (34) 142; (35) 532, 534; (36) 32; (37) 339, 729; (38) 33, 36, 238, 634.

varieties resistant—

- to root rot, (31) 448.
- to slime bacteria, (30) 749.
- to Thielavia, (27) 249.

variety tests, (39) 128; (40) 229, 230, 332, 735.

warehouse and curing house troubles, (32) 844.

warehouses, cooperative, in Wisconsin, (28) 895.

waste, analyses, (40) 621.

waste, fertilizing value, (39) 429.

wildfire, notes, (38) 97, 150.

wildfire, studies, (38) 852.

wilt, control, (40) 243.

wilt, description, (31) 745.

wilt in Rangpur district of Bengal, (30) 50.

wilt, studies, (38) 250.

wilt, treatment, (38) 49.

wireworm, notes, (34) 757.

wireworm, studies, (31) 253.

worm injurious to potatoes, (37) 157.

worm, notes, (33) 352.

worm, Southern, parasites of, (30) 59.

worms, studies, (40) 62.

yield of first generation hybrids, (27) 839.

Tobosa grass as hay or silage crop, (38) 471.

Tofu, preparation, (32) 560.

Tokras, notes, (40) 48.

Tokras, studies, (39) 146.

Tolerance and immunity, (40) 82.

Tollens, B., biographical sketch, (39) 900.

Toluene—

- as a soil disinfectant, (31) 27, 621.
- chlorination product mixtures, methods of analysis, (39) 807.

Toluene—Continued.

effect on—

- production of antibodies, (36) 479.
- soil protozoa, (36) 422, 814.
- soils, (37) 519.
- sterilization of soils by, (32) 816.

Toluene-p-sulphon-dichloramid, preparation, (38) 378.

Toluidin-blue stain, polychromatic, (39) 286.

Toluol—

effect on—

- action of maltase, (28) 503.
- micro-flora and fauna in soils, (30) 219.
- nitrate accumulation in soils, (31) 342.
- nitrification, (39) 717.
- nitrogen-fixing and nitrifying organisms, (40) 512.
- soil bacteria, (28) 824.
- zymases and phosphatase, (28) 803.

from spruce turpentine, (39) 209.

Totype velleda, notes, (28) 554.

Tomaspis—

- bicincta, notes, (40) 453.
- flavilatera, notes, (38) 459; (40) 261, 856.
- male genital armature of, (30) 250.
- postica, notes, (29) 353.
- saccharina in Grenada, (38) 158; (39) 360.
- spp., biological notes, (30) 251.
- tristis injurious to sugar cane, (37) 358.

Tomato—

bacterial—

- diseases, notes, (37) 652.
- rot, notes, (35) 547.
- wilt, notes, (32) 50; (33) 545.

black rot, notes, (32) 344.

black spot—

- cause and treatment, (33) 53.
- notes, (32) 240; (34) 644.

blight—

- notes, (34) 843; (38) 848.
- relation to potato late blight, (28) 747.
- resistant varieties, (26) 549.
- studies, (26) 549; (32) 444; (33) 350, 451; (37) 46.
- treatment with hot water, (34) 50.

blossom-drop, studies, (40) 644.

blossom end rot—

- cause and treatment, (26) 648, 649.
- notes, (31) 447, 644; (32) 49, 544; (33) 97; (39) 850; (40) 48, 154.
- studies, (32) 343; (33) 247.
- transmission, (35) 742.

buckeye rot, (37) 652; (38) 251.

bugs, notes, (40) 165.

canker, notes, (27) 849; (29) 847; (30) 148, 348, 845.

canning—

- club champions in 1913, (30) 399.
- clubs, notes, (28) 715.
- factories, sanitary control, (38) 13.
- industry, economics, (39) 615.
- industry in United States, (32) 210.

catsup, recipes, (28) 715.

catsups, analyses, (35) 164.

clubs in Virginia, (29) 599.

clubs, suggestions for, (31) 793.

collar rot, notes, (40) 844, 748.

conserves, analyses, (33) 164, 661.

contests for boys and girls, (28) 194.

damping-off disease—

- notes, (38) 251, 546; (40) 748.

studies, (35) 844.

disease in northern Italy, (31) 748.

diseases—

- description and treatment, (29) 847; (30) 50;

(32) 147; (38) 549; (40) 748.

in Barbados, (34) 841.

Florida, (39) 356.

Mauritius, (37) 551.

New Zealand, (37) 150.

Ohio, (39) 250.

Uruguay, (39) 651.

Western Australia, (33) 845.

notes, (26) 353, 649; (27) 240; (28) 148; (29)

246, 540; (31) 644, 747; (32) 636; (33) 98,

147; (34) 53; (37) 654; (38) 150; (39) 52, 149,

353, 753; (40) 344, 348, 844.

studies, (36) 749; (37) 842; (39) 51.

treatment, (30) 244.

early blight—

- and leaf mold, (39) 854.

notes, (38) 451.

Tomato—Continued.

- filiform leaf, characteristics, (31) 345.
- fly, notes, (27) 54.
- fruit rot, notes, (32) 49; (36) 746.
- fruit spot, studies, (32) 644; (33) 147.
- fruit worm, remedies, (40) 59.
- Fusarium wilt, notes, (32) 641.
- Grand Rapids disease, description, (31) 745.
- growers' associations, organizing, (40) 834.
- hobdies, construction, (26) 641.
- industry in Ontario, (26) 840.
- juice, osmotic pressure, (28) 262.
- late blight—
 - notes, (39) 850; (40) 47.
 - treatment, (37) 749.
- leaf blight—
 - control, (39) 756.
 - notes, (39) 841.
- leaf diseases—
 - studies, (33) 445.
 - treatment, (35) 350.
- leaf mold, notes, (31) 644; (39) 854.
- leaf roll—
 - notes, (37) 554.
 - studies, (28) 545.
- leaf rust—
 - description and treatment, (26) 849; (27) 249.
 - notes, (27) 651.
- leaf spot—
 - description and treatment, (38) 150.
 - dissemination, (40) 644.
 - notes, (27) 349; (30) 749.
 - studies, (35) 653.
 - treatment, (29) 435.
- meal, analyses, (26) 266.
- mosaic and allied diseases, (30) 148.
- mosaic disease—
 - carrier, (40) 251.
 - in Maryland, (33) 247.
 - notes, (30) 647; (35) 752; (37) 652; (38) 646.
 - studies, (31) 52; (36) 647; (38) 150.
- pickles, recipes, (28) 715.
- products—
 - analyses, (39) 205.
 - bacterial content, (39) 13.
 - detecting spoilage in, (26) 24.
 - methods of analysis, (27) 498.
 - microscopical studies, (38) 166.
- psyllid, remedies, (40) 162.
- psyllid, studies, (37) 849.
- pulp—
 - and paste, manufacture, (40) 17.
 - canning, (32) 356.
 - examination, (34) 12.
 - methods of analysis, (38) 63.
 - microscopic examination, (40) 14.
 - specific gravity, (39) 713.
- Rhizoctonia blight, (40) 746.
- root knot—
 - description, (31) 52.
 - notes, (32) 652; (36) 349.
- rot, notes, (30) 450.
- rot, studies, (34) 53.
- rust, notes, (35) 844.
- sclerotinia diseases, (40) 49.
- seed—
 - dried, composition and feeding value, (32) 471.
 - impermeable, viability, (35) 740.
 - oil in Italy, (30) 618.
- seedlings, transplanting, (29) 435.
- seeds—
 - and skins, utilization, (38) 807.
 - as cattle feed, (31) 663.
 - utilization, (28) 660.
- skins, paper from, (28) 660.
- sleeping disease, description, (31) 49.
- soaps, examination, (30) 666; (31) 658.
- streak blight, studies, (39) 51.
- suck fly in Porto Rico, (39) 59.
- thrips, remedies, (27) 757; (29) 251.
- weevil, buff-colored, notes, (35) 261.
- white mold, notes, (28) 654; (32) 652.
- wilt—
 - notes, (36) 348; (39) 52; (40) 348.
 - resistance, (39) 250, 356, 541, 855.
 - resistant varieties, (30) 50.
 - studies, (38) 250.
 - treatment, (39) 855.

Tomato—Continued.

- winter blight, studies, (34) 154; (38) 50.
- worm—
 - notes, (32) 651; (33) 352.
 - parasites of, (30) 59.
 - relation to leaf spot, (40) 645.
 - remedies, (33) 59.
 - studies, (26) 453.
- yellow blight, notes, (32) 844.
- Tomatoes—
 - acidity, (32) 204.
 - analyses, (32) 762.
 - and tomato products, industry in Italy, (38) 142.
 - antioxidase of, (34) 33.
 - antiscorbutic property, (40) 762.
 - as affected by lithium salts, (28) 526.
 - as host plant of red spider, (32) 157.
 - breeding experiments, (27) 239, 343, 741; (28) 539; (30) 343; (32) 234, 537; (35) 35, 235; (37) 240, 827; (38) 40, 241, 842; (39) 140; (40) 740.
 - breeding experiments in Porto Rico, (39) 39.
 - canned—
 - analyses, (38) 63.
 - detection of added water, (27) 310.
 - examination, (28) 357; (29) 60; (36) 561.
 - methods of analysis, (29) 799.
 - studies, (28) 862; (30) 665.
 - canning, (26) 640; (28) 299, 715.
 - canning, production in United States, (40) 594.
 - carbon dioxide for, (31) 532.
 - color inheritance, (38) 443.
 - composition, (30) 666.
 - composition as affected by rainfall, (34) 636.
 - copper in, (37) 263.
 - cost of distribution, (29) 492.
 - critical period of growing season, (39) 811.
 - cross- and self-fertilization, (38) 241.
 - culture, (26) 393, 539; (27) 240; (29) 193, 395, 434, 540, 744; (30) 442; (31) 44, 298; (32) 141, 636, 741; (33) 639; (34) 42; (35) 142; (37) 143; (38) 796; (40) 42.
 - culture—
 - and recipes, (39) 165.
 - experiments, (26) 640; (29) 540; (33) 140, 438; (40) 147.
 - for canning factory, (37) 343.
 - in Arkansas, (39) 645.
 - Burma, (29) 736.
 - greenhouses, (33) 42; (37) 41.
 - Michigan, (39) 445.
 - Philippines, (33) 837.
 - Porto Rico, (36) 341.
 - the South, (32) 636.
 - cuttings, root production, (40) 42.
 - Cytospora batata attacking, (39) 456.
 - detecting spoilage in, (26) 24.
 - double flowers in, (34) 143.
 - early, culture, (40) 742.
 - effect on composition of urine, (31) 761.
 - electrical stimulation, (39) 735.
 - electroculture experiments, (40) 147.
 - elongation of hypocotyl, (28) 39, 739.
 - examination, (38) 314.
 - fertilizer experiments, (27) 324; (29) 22, 434; (30) 532, 839; (36) 219, 839; (37) 41, 321; (39) 745, 843; (40) 42, 134, 147.
 - from blighted vines, composition, (35) 643.
 - fruit thinning experiments, (27) 741.
 - glutamic acid in, (27) 634.
 - grafting on cabbage, (35) 341.
 - graphic summary of seasonal work, (39) 495.
 - greenhouse diseases of, (36) 250, 350.
 - greenhouse, investigations, (29) 145; (32) 636.
 - growth—
 - as affected by carbon dioxide, (32) 422.
 - as affected by electric light, (28) 228.
 - in artificial light, (28) 735.
 - in heated soils, (35) 722.
 - in partially sterilized soils, (26) 815.
 - on sterilized soils, (31) 336.
 - hardening by exposure to cold, (40) 26.
 - inheritance—
 - and correlation in, (28) 739; (34) 146.
 - in, (27) 740, 742; (28) 539; (30) 343; (32) 538; (34) 42; (35) 141.
 - of size in, (33) 537; (35) 445.
 - insects affecting, (26) 353; (27) 240; (28) 654; (32) 636, 652.
 - irrigation, (31) 782; (33) 287.

Tomatoes—Continued.

- irrigation experiments, (29) 638; (30) 886; (31) 732.
 - lessons on, (35) 896.
 - lighting injury, (40) 645.
 - liming experiments, (39) 745.
 - localization of acids and sugars in, (36) 110.
 - lycopin and carotin in, (29) 132.
 - manual, (34) 737.
 - marketing by parcel post, (30) 593.
 - mulching v. clean culture, (33) 534.
 - nematodes affecting, (30) 245.
 - new bacterial disease of, (28) 345.
 - oil and press cake from seeds, (40) 803.
 - parthenogenesis in, (29) 837; (34) 233, 727.
 - Phytophthora infestans affecting, (29) 445; (36) 49, 451, 749.
 - picking maturity, (37) 543.
 - planting experiments, (32) 141.
 - pollination, (32) 636; (40) 741, 833.
 - preservation, (29) 312.
 - preservation by pressure, (32) 416.
 - preserved—
 - analyses and adulteration, (31) 358.
 - glutaminic acid in, (27) 364.
 - use of residue, (28) 660.
 - pruning and ringing, (40) 42.
 - pruning experiments, (26) 641; (33) 140.
 - radioactive fertilizers for, (35) 628.
 - rail shipments and distribution of, (33) 837.
 - recipes, (39) 165.
 - red pigment of, (32) 203.
 - red spider attacking, (39) 65.
 - reducing and nonreducing sugars in, (29) 503.
 - relation to cholera, (27) 766.
 - removal of Bordeaux mixture stains from, (35) 644.
 - resistance to cold, (39) 525.
 - resistance to Fusarium, (39) 150.
 - Rhizopus nigricans affecting, (30) 349, 351.
 - seed production and germination, (39) 841.
 - seed treatment, (39) 238.
 - seedless, production, (34) 233.
 - selection experiments, (40) 444.
 - selection for wilt resistance, (34) 646.
 - sodium nitrate for, (39) 328.
 - spraying, (39) 345, 756.
 - spraying and dusting experiments, (36) 750.
 - spraying in relation to delayed ripening, (39) 854.
 - straw mulch for, (39) 241.
 - transpiration as affected by Bordeaux mixture, (38) 126.
 - treatise, (37) 645.
 - variation in, (28) 639; (29) 339.
 - varieties, (26) 840; (29) 145, 235, 434, 745; (31) 47, 236, 439, 835; (32) 141, 438, 636; (33) 140, 438, 735; (34) 146, 232; (35) 539; (36) 137; (37) 645.
 - varieties—
 - for canning, (39) 241.
 - resistant to Cladosporium fulvum, (33) 247.
 - resistant to disease, (38) 843.
 - susceptible to Fusarium wilt, (29) 436.
 - variety tests, (39) 240; (40) 44.
 - variety tests, difficulties in, (29) 41.
 - vegetation and reproduction, (40) 40.
 - water content as affected by cooking, (26) 462.
 - winter, disease of, (38) 546; (40) 155.
 - yield as affected by crossing, (27) 239.
- Tomicus radiatae** n.sp., description, (34) 361.
- Tomocera californica**, parasitic on black scale, (26) 555.
- Tomostethus multicinctus**, notes, (26) 254.
- Tonics**, bitter, effect on gastric secretion, (32) 858.
- Tonsilitis**—
- epidemics, milk-borne, (32) 577.
 - outbreak, due to milk supply, (26) 575.
- Topography**—
- of Iowa, (28) 316.
 - relation to frost, (28) 414.
- Tor** grass, description and eradication, (29) 142.
- Torenia fournieri**, mineral nutrition, (28) 224.
- Tornado**—
- at Owosso, Michigan, (26) 614.
 - at Pace, Fla., (34) 614.
 - Bremo Bluff, (27) 413.
 - in eastern Mississippi, (34) 615.
 - Lebanon, Kans., (30) 417.
 - Nebraska, (30) 417.

Tornado—Continued.

- in southwest Missouri, (27) 616.
 - western Montana, (29) 722.
 - insurance, mutual, in Illinois, (36) 791.
 - near Canton, N. Y., (26) 214.
 - near Davenport, Iowa, (26) 614.
 - near Syracuse, N. Y., (28) 415.
 - of Oct. 13, 1870, (28) 531.
- Tornadoes**—
- in Illinois, (27) 414.
 - in Kansas, (34) 615.
 - in Wisconsin, (30) 417.
 - notes, (37) 513, 807.
 - papers on, (27) 816; (29) 510.
 - prediction, (31) 213.
- Torrens** system of land title registration, (39) 89.
- Torrents of Savoy**, treatise, (35) 346.
- Tortillas**, preparation, (27) 665.
- Tortoise** beetles, notes, (36) 257.
- Tortricid** genitalia, notes, (40) 264.
- Tortricina**, Australian, revision, (26) 656.
- Tortrix**—
- albicomana, notes, (35) 54.
 - argyrospila, notes, (40) 263.
 - (Cacoecia) lambertiana n.sp., description, (33) 748.
 - (Cacoecia) responsana, notes, (27) 57.
 - causing decay in oranges, (39) 159.
 - forskaleana, life history, (31) 157.
 - fumiferana, see Spruce bud moth and Spruce bud worm.
 - oleraceana n.sp., description, (36) 552.
 - pillleriana, destruction by heat, (34) 653.
 - pronubana—
 - notes, (30) 356.
 - on carnations, (33) 655.
 - studies, (39) 466.
 - viridana—
 - life history, (37) 57.
 - notes, (29) 558.
 - remedies, (32) 850.
 - studies, (28) 559.
- Torula**—
- communis in sugar, (38) 806.
 - pulcherrima, notes, (29) 116.
 - sp., in Stilton cheese, (28) 879.
- Torulae**, itinerary in butter manufacture, (39) 78.
- Torulin**, isolation, (28) 67.
- Tosastes cinerascens**, notes, (35) 364.
- Toumeyella liriodendri**, notes, (28) 554; (33) 58, 253.
- Tourmaline**, decomposition by soil bacteria and yeast, (31) 121.
- Towé** beans, culture experiments, (32) 227.
- Towels**, roller, dissemination of typhoid fever by, (31) 68.
- Towns**, little, rural relationships, (40) 892.
- Toxascaris limbata**—
- dissemination by flies, (30) 659.
 - studies, (40) 186, 187.
- Toxic**—
- excretions of plants, (27) 30.
 - solutions, determination of antagonism, (31) 627.
 - solutions, effect on plants, (32) 627.
 - substances, determination of minimal lethal dose, (31) 80.
 - substances, effect on olives, (26) 825.
- Toxicity**—
- and malnutrition in plants, discussion, (33) 725.
 - theory of, (34) 652.
- Toxicology**—
- avian, experiments in, (40) 587.
 - treatise, (27) 679.
- Toxinaemia**, ovine, studies, (28) 182.
- Toxins**—
- and microbes, treatise, (26) 373.
 - bacterial, action of formaldehyde on, (26) 782.
 - bacterial, in soils, (32) 399.
 - detection in food, (31) 207.
 - fixation by leucocytes, (34) 275.
 - formation by plants, (31) 627.
 - in treatment and diagnosis, (36) 575.
 - of intestinal parasites, (34) 879.
 - preparation and sale in United States, (32) 875.
 - propagation and sale, (28) 677; (39) 787.
 - separation, (38) 786.
 - soil, formation, (34) 218.
 - verminous, paper on, (32) 271.
- Toxoplasma canis**, studies, (29) 484.

Toxoptera—

analytical key and notes, (27) 256.

aurantiae, notes, (26) 755.

cofeae, notes, (37) 662.

graminum—

destruction by birds, (29) 452.

embryology, (33) 748.

in Texas, (40) 856.

in the South, (39) 559.

natural control of, (31) 352.

notes, (26) 856; (30) 658; (36) 755.

on coffee in India, (40) 651.

outbreak in Kansas, (37) 561.

parasite of, (32) 353.

remedies, (34) 653.

muhlenbergiae, n.sp., description, (27) 256.

Toxorhynchites immisericors, destructive to mos-

quitoes, (26) 349.

Toxotrypana curvicauda—

danger of introduction, (39) 467.

investigations, (32) 60.

notes, (29) 652.

Toxylon pomiferum as source of rubber, (29) 546.

Toyama, K., biographical sketch, (39) 200.

Trachea—

basilinae, notes, (36) 552.

in warm-blooded animals, size of, (28) 375.

Tracheids, ray—

in conifers, (28) 440.

in *Quercus alba*, (38) 45.in *Sequoia sempervirens*, (30) 744.

Trachoma bodies—

culture experiments, (30) 278.

notes, (27) 780.

Trachyderes thoracicus, notes, (26) 147; (28) 858;

(30) 454.

Trachykele sp. on cedar, (39) 467.

Traction—

farming and engineering, handbook, (30) 89.

gear, description and tests, (29) 389.

plowing, treatise, (26) 89.

Tractioners, training, (26) 686.

Tractor—

engines—

fuels for, (40) 190.

low gravity fuels for, (26) 398.

magneto ignition, (40) 190.

experience in Illinois, (39) 591.

farming, survey in Iowa, (38) 292.

hitches and adjustments for plows, (38) 88.

implements, need of, (26) 398.

plowing, *see* Plowing.

transmissions, (40) 190.

Tractors—

agricultural, notes, (29) 185.

agricultural, tests, (28) 685.

bearings for, (33) 293.

buying, (38) 692.

compaction of soils by, (36) 400.

cost of operation, (38) 292.

description, (30) 291, 590.

directory, (36) 491.

drawbar rating of, (35) 791, 890.

economic size, (40) 190.

economic studies, (40) 299.

efficiency and tests, (27) 387.

enduring, design of, (40) 190.

engineering charts, (40) 189.

farm, directory and specifications, (35) 889.

for farms, (35) 87.

for intertilled crops, (26) 398.

for small farms, (38) 497.

gas, construction and operation, (35) 188.

in eastern farming, (40) 89.

standardization, (29) 185.

testing, (28) 200.

treatise, (31) 590.

use in Iowa, (33) 488.

gasoline and oil, directory and specifications, (34) 891.

gears, (40) 190.

harvesting and plowing simultaneously with, (38) 390.

harvesting, operation, (34) 891.

in Idaho farming, (40) 90.

in Indiana farming, (40) 788.

notes, (27) 791.

oil, for the farm, (29) 893.

papers on, (36) 397.

plowing with, (31) 785; (35) 391.

Tractors—Continued.

qualifications, (36) 287.

relation of drawbar pull to weight, (34) 589.

repairing boilers of, (34) 890.

short-course instruction in, (36) 400; (38) 95.

small—

farm, paper on, (26) 789.

for threshermen, (33) 489.

paper on, (26) 789.

progress in, (33) 589.

specifications, (35) 391, 791; (37) 788, 886.

steam, dynamometer for, (30) 389.

steam, indicator for testing, (29) 389.

tests, (27) 791; (28) 685; (29) 86, 390; (30) 190;

(31) 187, 487, 590; (32) 189; (34) 589; (35) 293,

687, 688; (36) 189, 288, 389, 588, 589; (37) 387,

886; (38) 790, 791.

treatise, (38) 390.

use in—

corn belt, (35) 292.

Mexico, (38) 693.

pulling trees, (29) 389.

road grading, (26) 685.

Russia, (32) 589.

use on farms, (32) 886.

v. horses for farm power, (31) 186; (32) 589; (37) 227.

v. horses for hauling gravel, (35) 495.

views of users of, (33) 488, 489.

Trade winds of—

Atlantic and northern European seas, (34) 118.

North Atlantic, relation to temperature in

Europe, (36) 719.

Traders, farmers, and agricultural organization,

booklet, (28) 292.

Tradescantia—

discolor as affected by anesthetics, (26) 824.

root hairs as affected by bog water, (29) 523.

scopolorum, notes, (29) 441.

self-sterility, (38) 426.

Traffic laws in relation to highway engineering,

(40) 387.

Tragocephala pretiosa, notes, (29) 853.

Tragus racemosus, analyses and digestibility, (32) 167.

Trailers, specifications, (35) 585.

Trails, construction in National Forests, (34) 190.

Trametes—

pini—

effect on wood of *Pinus excelsa*, (33) 855.

in India, (34) 547.

notes, (27) 653; (28) 241; (29) 851; (31) 349,

547, 646; (36) 453; (38) 332.

sporophores of, (33) 552.

studies, (35) 155.

radiciperda infection of wood by, (33) 651.

sepium, notes, (27) 753.

serialis, notes, (35) 252.

setosus n.sp., description, (31) 247.

spp. on forest trees, (40) 349.

Translocation in young trees, (27) 425.

Transpiration—

and absorption in plants, differentiation, (26) 822.

sap ascent in plants, treatise, (33) 127.

sap flow in plants, (27) 222.

water vapor retention in plants, (29) 524.

as a factor in crop production, (35) 823.

effect on—

plant growth and distribution, (31) 625.

run-off, (40) 810.

soil moisture, (28) 218.

experiments with plants, (38) 223.

in corn and sorghums, (39) 440.

desert plants, (27) 331; (34) 728; (37) 129.

leaves, (31) 222.

leaves at different stages, (28) 823.

leaves, resistance to, (28) 528; (29) 217.

Mangroves, (30) 30.

plants, (27) 222, 223, 522; (31) 324; (33) 628;

(34) 334; (35) 633; (36) 225, 824; (37) 429;

(39) 122, 223, 631; (40) 27, 427, 820.

plants as affected by—

altitude and habitat, (35) 732.

Bordeaux mixture, (39) 828.

environment, (34) 522.

rusts, (39) 26.

plants

automatic registration, (34) 729.

determination, (35) 732.

Transpiration—Continued.

- in plants—continued.
 - in winter, (31) 728.
 - measuring, (37) 429.
 - notes, (26) 532.
 - periodicity, (37) 429.
 - regulation, (32) 522.
 - relation to soil fertility, (26) 36.
 - studies, (29) 524; (32) 221; (33) 29, 628.
 - treatise, (33) 127.
 - prairie and forest plants, (26) 821.
 - prairie plants, (26) 821; (36) 734.
 - rain-forest plants, (32) 429.
 - steppe plants, (37) 129.
 - succulent plants, (27) 522.
 - sugar cane, (39) 331.
 - water plants, (27) 223, (32) 426.
 - wet leaves, (27) 222.
 - wheat seedlings, (28) 629.
 - white pine seedlings, (33) 224.
 - physics of, (28) 729.
 - relation to—
 - composition of pine seedlings, (32) 824.
 - soil moisture, (36) 525.
 - stomata, (35) 27; (36) 329.
 - water content of leaves, (26) 627; (27) 331.
 - relative, in plants, studies, (30) 726.
 - scale, automatic, description, (34) 226.
 - stream, relation to absorption of salts, (30) 629.
 - studies, (36) 225.
- Transpiring power of plants, (34) 334, 728; (36) 824; (37) 26.
- Transpirometer, recording, description, (31) 32.
- Transportation of perishable products, (40) 488.
- Trappist monks, dietary studies, (26) 868.
- Traps, glass, for insects, (26) 153.
- Traubenwicklers, notes, (26) 655.
- Traumatic shock and hemorrhage, treatment, (39) 885.
- Traumatism—
 - in living cells, (38) 647.
 - immunization, (34) 580.
- Tree—
- branches, movement at freezing temperatures, (36) 129.
 - canker, cause, (26) 448.
 - crickets—
 - as carriers of fungi, (35) 547.
 - life history and bionomics, (33) 653.
 - notes, (29) 354.
 - relation to apple canker, (34) 653.
 - studies, (31) 649.
 - crop, new, testing for hardiness, (40) 538.
 - diseases—
 - and insect pests, control, (35) 461.
 - bibliography, (27) 753.
 - control, (40) 252.
 - descriptions, (30) 151.
 - due to the larger fungi, (40) 349.
 - forest surveys of, (39) 357.
 - in California and Nevada, (30) 751.
 - eastern United States, (27) 450.
 - Federated Malay States, (29) 552.
 - India, (36) 453.
 - Mecklenburg, (31) 343.
 - Montana, (38) 553.
 - southern Appalachians, (31) 348, 646.
 - Texas, (26) 645.
 - manual, (40) 53.
 - notes, (26) 852; (27) 645, 653, 747, 753, 851; (28) 148, 555; (29) 446, 552, 851; (30) 147, 245, 849; (31) 845; (34) 448; (36) 353, 453, 842; (37) 760.
 - studies, (32) 238; (37) 756; (38) 645.
 - treatise, (36) 540.
 - treatment, (27) 452.
 - feller, steam, description, (36) 45.
 - fillings for orchard and shade trees, (32) 637.
 - fungi, new hosts for, (33) 550.
 - hoppers—
 - bird enemies, (39) 860.
 - injurious to apple orchards, (32) 449.
 - of Nova Scotia, (40) 57.
 - leaves, effect of sun and shade on, (37) 747.
 - of heaven, history and botanical notes, (35) 747.
 - pests, notes, (26) 59.
 - planter, mechanical, description, (31) 341.
 - planting—
 - camps, (37) 243.
 - explosive-fertilizer shell for, (40) 44

Tree—Continued.

- planting—continued.
 - machine, description, (36) 745.
 - use of dynamite in, (32) 535.
 - use of explosives in, (26) 91.
 - puller, hand-winch, description, (27) 191.
 - roach in Hawaii, (34) 59.
 - roots, adaptation to aquatic mediums, (30) 45.
 - rots, descriptions, (35) 755.
 - rusts—
 - and their treatment, (37) 155.
 - inoculation experiments, (38) 253.
 - notes, (38) 553; (40) 349.
 - overwintering, (39) 553.
 - pycnial stages, (38) 253.
 - seed—
 - coniferous, studies, (39) 750.
 - industry in British Isles, (39) 145.
 - testing, (39) 847.
 - testing station at Eberswalde, (34) 837.
 - vitality as factor in determining forest types, (39) 145.
 - seedlings—
 - growth in shade, (36) 243.
 - transplanting lath for, (37) 836.
 - seeds—
 - as affected by locality, (32) 339.
 - chalcidids affecting, (28) 657.
 - collecting, storing, and planting, (27) 148.
 - coniferous, germination tests, (33) 645.
 - depth of covering, (37) 451.
 - extracting and cleaning, (28) 146.
 - germination, (33) 343.
 - germination tests, (26) 842; (30) 646; (38) 846.
 - hastening germination, (33) 248.
 - methods of testing, (34) 837.
 - preservation, (35) 346.
 - production, determination, (33) 144.
 - selection, (38) 45.
 - source of, in natural reproduction, (38) 145.
 - storage experiments, (33) 243; (37) 547.
 - testing in Scandinavia, (34) 440.
 - testing methods, (31) 639.
 - shoots, analyses, (29) 570.
 - study, leaf-portfolio as an aid in, (30) 898.
 - surgery—
 - notes, (31) 340, 646; (32) 637.
 - pneumatic chisel in, (30) 642.
 - treatise, (30) 236.
 - trunks, introduction of solutions into, (36) 740.
 - trunks, winter expansion, (39) 628.
 - volumes, graphic calculation, (40) 153.
 - wounds and diseases, treatment, (36) 544.
 - wounds, painting, (35) 446.
- Trees—
- absence on high prairies, (38) 521.
 - acclimatizing, (28) 543.
 - American and Japanese, in Royal Forest at Hambach, (30) 645.
 - and shrubs—
 - deciduous, of central Europe, handbook, (30) 742.
 - for seaside planting, (40) 447.
 - of British Isles, treatise, (32) 337.
 - on the farm, (40) 447.
 - treatise, (30) 445.
 - animals injurious to, (26) 452.
 - artificial medication of, (26) 451.
 - as affected by—
 - asphyxiating gas, (37) 253.
 - bark ringing, (38) 128.
 - cyanid, (32) 846.
 - forest fires, (27) 348.
 - freezing, (28) 824.
 - grass, (29) 339.
 - illuminating gas, (35) 636.
 - ivy, (35) 636.
 - light, (32) 144.
 - miscible oils, (33) 252.
 - oxalic compounds, (29) 49.
 - potassium cyanid, (33) 154, 556, 725; (39) 225, 762.
 - smoke, (33) 428.
 - smoke and flue dust, (26) 33.
 - smoke and gas, (38) 28.
 - tarred roads, (26) 432; (27) 30, 333.
 - as lightning conductors, (27) 444.
 - ascent and descent of water in, (29) 524.
 - assimilation and chlorophyll content of leaves, (28) 728.

Trees—Continued.

- at Belle Fourche experiment farm, (36) 143.
- at forest nursery in Rhodesia, (40) 641.
- autumn twig cast, (29) 217.
- bark structure, (27) 347.
- berry-bearing, for birds, (34) 238.
- bibliography, (26) 442; (34) 238.
- blasting, (29) 183.
- bleeding, notes, (29) 357.
- blooming dates for Iowa, (26) 237; (27) 240.
- branch movements in, (29) 526.
- breeding, (28) 543.
- breeding experiments, (27) 343; (32) 539; (38) 641.
- broad-leaf deciduous, of United States, (37) 346.
- broad-leaved, form height tables for, (35) 347.
- cambial activity, (37) 128.
- Chinese, for Pacific slope and Gulf coast regions, (35) 450.
- Chinese ornamental, notes, (32) 440.
- composition during vegetative period, (27) 630.
- coniferous, *see* Conifers.
- cost of planting, (32) 839.
- cost of pulling, (29) 389.
- culture, (31) 140.
- culture—
 - and care, (34) 836.
 - and surgery, (36) 897.
 - experiments, (26) 237; (27) 343; (28) 147, 827; (32) 539, 542; (36) 39; (38) 44, 611.
 - in California, treatise, (33) 441.
 - India, (27) 537.
 - Lucknow, (34) 232.
 - sand hills of Nebraska, (35) 842.
 - South Dakota, (32) 440.
 - western Nebraska, (29) 546; (32) 234.
- damage by iron spurs, (38) 555.
- damage by lightning, (34) 510.
- defoliated, growth in, (29) 643.
- desert, transpiration, (32) 429.
- destruction by termites, (28) 563.
- determination of increment by stem analysis, (40) 153.
- diameter growth, causes, (29) 342; (40) 744.
- diameter growth in, (34) 536; (35) 648.
- differences in wood of upper and lower sides of branches, (39) 629.
- distribution—
 - for western Nebraska, (36) 143.
 - in Karafuto, (26) 842.
 - under Kinkaid Act, (40) 248.
- dormant, as affected by petroleum products, (29) 354; (30) 657.
- dressings for pruning wounds, (27) 744.
- dwarfing effect upon neighboring plants, (35) 132.
- effect on—
 - rainfall, (37) 716.
 - the soil and its vegetation, (32) 618.
- electrical—
 - injury to, (31) 153; (32) 428.
 - resistance of, (28) 340.
- English names, (35) 747.
- evergreen—
 - accumulation of reserve food material in winter, (32) 640.
 - for Iowa, (37) 548.
- exotic—
 - culture in Italy, (36) 45.
 - for Ireland, (30) 645.
- fall v. spring planting, (31) 335.
- field manual, (31) 494; (33) 297.
- first grade lessons on, (31) 792.
- food movement in, (33) 127.
- for eastern Colorado, (37) 837.
- eastern Washington, (37) 146.
- home grounds, (34) 741.
- home planting, (39) 450.
- Idaho, (35) 451; (37) 244; (39) 351, 647.
- Kansas, (35) 43.
- latitude of St. Louis, (34) 439.
- northern Minnesota, (37) 241.
- railway gardening, (35) 450.
- replacing railway snow fences, (36) 745.
- Rhodesia, (37) 746; (39) 144.
- street and yard, care, (31) 536.
- street planting, (35) 42.
- Truckee-Carson reclamation project, (31) 835.
- forcing experiments (28) 837.
- forcing with radium, (27) 438.
- foreign, in forests of Saxony, (30) 446.

Trees—Continued.

- forest—
 - as affected by calcium salts, (32) 728.
 - as affected by heat, (31) 348.
 - breeding experiments, (33) 735.
 - concrenences in, (30) 432.
 - cryptogamic diseases of, (37) 53.
 - culture experiments, (33) 236, 735.
 - culture under dry farming, (30) 435.
 - fertilizers for, (28) 843.
 - germination and early growth, (36) 447.
 - injuries by mice, (26) 299.
 - insects affecting, (30) 53; (34) 651.
 - nursery, cost accounts for, (34) 641.
 - of Canada, (36) 644.
 - Europe, encyclopedia, (31) 143.
 - Great Britain, (36) 746.
 - Hawaii, (36) 745.
 - Madagascar, (34) 742.
 - phenological data, (33) 825.
 - root growth, (35) 223; (37) 27.
 - tolerance studies, (31) 640, 838; (36) 242.
 - winterkilling, (27) 348.
- form as affected by wind, (29) 27.
- frost cracks on, (28) 330.
- frost injuries, (27) 851; (28) 148.
- fungus root rot affecting, (27) 450.
- gas injury, (37) 726.
- gas poisoning of, (30) 131.
- girth-increment measurements, (34) 347.
- growing season, (39) 122.
- growth—
 - as affected by removal of forest litter, (27) 845.
 - as affected by soils, (29) 416.
 - curves for, (35) 347.
 - in drifting sand, (32) 47.
 - in vicinity of Grinnell, Iowa, (38) 544.
 - measurements, (39) 246.
 - measuring device, (40) 817.
 - meteorological factors in, (32) 237.
 - relation to precipitation, (30) 417, 445.
 - relation to rainfall and sun spots, (38) 415.
 - rings and rainfall, relationship, (31) 716.
 - role of soil temperature in, (39) 541.
 - studies, (28) 49; (32) 840; (35) 841.
- growing on grass land, (26) 639.
- guide, (31) 444, 494.
- hail injury, (37) 250.
- handbook, (26) 642; (27) 346.
- hardwood, growth data, (37) 651.
- hardwood, heart rots of, (30) 52.
- hedge, of New Zealand, (27) 541.
- height measurement, (26) 442.
- height measuring devices for, (36) 144.
- hybridization, (30) 329; (35) 451.
- illustrating, (27) 491.
- importance of seed selection, (26) 141.
- in California, treatise, (31) 837.
- in Demerara botanic garden, (39) 546.
- in New Zealand botanic garden, (39) 450.
- Indian, stand measurements, (40) 46.
- Indian, yearly volume increments, (38) 751.
- indigenous, of Hawaii, treatise, (29) 643.
- indigenous to Australia, (26) 830.
- individual selection experiments, (29) 441.
- infertile spots under, (38) 816.
- injury by grass, (38) 222.
- insects affecting, (26) 654; (27) 255, 346, 356, 452, 552, 645, 658; (28) 248; (29) 252; (32) 448, 753; (33) 153, 253, 746; (35) 756; (37) 459, 760; (38) 357, 358, 459, 556; (40) 163.
- insects affecting in India, (40) 259, 260.
- inspection in Maryland, (27) 552.
- interference bands, (39) 246.
- lessons on, (31) 394; (33) 696.
- light and soil requirements, (37) 244.
- light requirements, measurement, (33) 738.
- list of seeds, (28) 235.
- little leaf of, (34) 248.
- manual, (30) 645, 843.
- measurement of height, (34) 641.
- measurements, (31) 341, 839; (35) 748.
- measuring instrument for, (31) 341.
- medicinal uses, (36) 244.
- Mexican, in South Africa, (30) 346.
- mixing, (35) 43.
- mycorrhizas affecting, (31) 127; (36) 527.
- new, in Kew Gardens, (31) 236.
- new, of Philippines, (38) 247.

Trees—Continued.

- new or noteworthy, from Colombia and Central America, (34) 827.
- North American, distribution, (29) 149.
- nutrient absorption in, (26) 443; (32) 743.
- of Agra and Oudh, (31) 235.
- Alaska, (29) 342.
- America, treatise, (29) 441.
- Argentina, (39) 451.
- British Guiana, (40) 542.
- California coastal climate, root characters, (32) 429.
- California, descriptions, (40) 744.
- Cambridge Botanic Garden, (34) 152.
- Canada, (39) 145.
- central Europe, (31) 538.
- Chile, (38) 336.
- China, treatise, (33) 50.
- eastern United States, (37) 746.
- eastern United States and Canada, key, (27) 442.
- eastern United States, leafing, flowering, and seedling calendar, (33) 844.
- Egypt, (36) 843.
- Florida, handbook, (30) 45.
- Formosa, (36) 345.
- Georgia, (37) 650.
- Great Britain and Ireland, treatise, (28) 145; (29) 747.
- Great Britain, handbook, (27) 646.
- Hawaii, (36) 345.
- humid tropical districts, periodicity, (31) 743.
- Indiana, (27) 452; (37) 44.
- Indiana, range and distribution, (34) 537.
- Indiana, White Co., (40) 152.
- Indo-China, properties of woods, (40) 46.
- Japan, growth data, (33) 844.
- Java, (31) 640.
- Java, atlas, (30) 446.
- Kentucky, (38) 543.
- Konahuanui region, (34) 537.
- Maine, manual, (39) 144.
- Mexico, (27) 147.
- Michigan, (29) 43.
- Minnesota, manual, (28) 145.
- Missouri River basin, (34) 838.
- Mount Vernon, (38) 544.
- Nebraska, (27) 346.
- New Jersey, leaf key, (26) 240.
- New Mexico, (29) 842.
- New South Wales, (38) 544; (39) 145.
- New York, (35) 147.
- Newark, New Jersey, (37) 346.
- North America, (33) 437; (40) 248, 542.
- North America, guide, (39) 647.
- North Carolina, manual, (36) 445.
- northeastern America, manual, (28) 342.
- Oahu lowlands, (34) 345.
- Oklahoma, (29) 441.
- Pacific coast, (34) 152.
- Pennsylvania, treatise, (33) 49.
- Philippines, descriptions, (28) 343.
- Porto Rico, (36) 243.
- Queensland, (38) 247.
- Sao Paulo forests, (39) 351.
- Southern Circle of Central Provinces, (32) 144.
- Texas, (34) 640.
- United States, treatise, (33) 437; (37) 346.
- Vermont, (36) 539.
- western Morocco, (26) 643.
- Wyoming, (38) 255.
- oil injuries to, (36) 856.
- ornamental—
 - adaptation tests, (29) 41.
 - at Belle Fourche Experiment Farm, (33) 837.
 - blooming dates, (34) 144; (39) 745.
 - breeding experiments, (29) 235; (33) 735.
 - causes affecting growth, (33) 49.
 - culture, (29) 148.
 - culture experiments, (29) 235; (32) 437; (33) 236, 735.
 - description, (35) 450.
 - diseases of, (30) 746.
 - for Kansas, (31) 537.
 - for unfavorable city conditions, (33) 442.
 - for windbreaks, (37) 147.

Trees—Continued.

- ornamental—continued.
 - notes, (29) 395.
 - of Dade County, Florida, (31) 239.
 - of Hawaii, (37) 546.
 - storm and drought injury to foliage, (33) 550.
 - tests, (36) 443.
 - treatise, (37) 44.
 - varieties, (29) 41, 235, 540; (36) 837; (38) 142.
 - varieties for Illinois, (28) 437.
 - withertip disease, (27) 152.
- osmotic pressure as an index of habitat, (38) 348.
- overthrow by wind, factors in, (39) 847.
- penetration by solutions, (37) 327.
- periodicity—
 - and annual ring formation, (28) 340.
 - of synthetic processes in, (27) 425.
- planting, (26) 543; (27) 241, 299; (36) 843.
- planting—
 - by farmers, (27) 542.
 - cooperative work, (27) 348.
 - fall v. spring, (33) 236.
 - in Colorado, (38) 643.
 - pastures, (26) 130.
 - plains region, (38) 348.
 - southern Rhodesia, (26) 49.
 - Texas, (37) 452.
- methods, (33) 738.
- on dry farms, (28) 49.
- prairies, (32) 840.
- sand dunes of Oregon coast, (38) 348.
- school grounds, (28) 897.
- sugar plantations in Hawaii, (38) 644.
- with dynamite, (29) 339; (31) 590; (33) 90.
- poisoning by gas, (31) 730.
- Polyporaceae on, (39) 149.
- propagating by cuttings, (40) 340.
- propagation and pruning, (30) 236.
- protection—
 - against rabbits and mice, (27) 344.
 - and surveillance, (27) 444.
 - in Malaya, (31) 50.
- radial growth and annual ring formation, (36) 223.
- red-belt injury, (40) 542.
- regional spread of moisture in, (40) 541.
- relation—
 - between root habits, ground water, and species distribution, (29) 136.
 - to rainfall, (27) 348.
 - to white grub injury, (33) 159.
 - to woodpeckers, (26) 58.
- resinous tracheids, (39) 451.
- resistance to gipsy moth attack, (28) 556.
- resistance to sulphur dioxide, (31) 146.
- ring formation, (28) 49, 340.
- ringbarked, killing with arsenic, (34) 485.
- ring-porous and diffuse-porous, (39) 122.
- roadside, in North Carolina, (39) 245.
- root disease affecting, (27) 445.
- sap ascent in, (29) 524; (33) 827; (34) 727.
- sap discharged by, (35) 648.
- sap of, composition, (35) 822.
- second growth phenomena, (28) 340; (30) 646.
- secondary, seedling experiments, (33) 844.
- seed, for reforesting cut-over areas, (33) 739.
- shade—
 - acclimatization, (34) 231.
 - and ornamental, diseases, (40) 645.
 - and ornamental, protection, (26) 339.
 - and ornamental, varieties, (38) 842.
 - anthracnose of, (38) 249.
 - care, (31) 536.
 - course of study, (39) 798; (40) 96.
 - culture, (32) 839.
 - diseases of, (26) 57; (30) 151.
 - dying, (28) 345.
 - for Kansas, (28) 643.
 - for Maine, (35) 840.
 - for Oregon, (39) 241.
 - in Newark, New Jersey, (31) 744.
 - insects affecting, (27) 346, 452, 645, 658; (28) 57; (30) 454; (33) 153; (34) 250, 651; (35) 356, 756; (38) 257, 357; (39) 561, 863; (40) 161, 163, 259, 352.
 - management, (36) 842.
 - planting and care, (27) 645; (32) 541; (39) 450.

- Trees—Continued.
 shade—continued.
 pruning, (35) 840.
 spraying, (26) 48.
 varieties, (34) 231.
 silver leaf disease, (39) 553.
 snow cracks on, (36) 733.
 snow injury to, (36) 448.
 stand in relation to soil moisture, (33) 816.
 standing—
 determination of form, (27) 646.
 volume and value accretion, (27) 245.
 stem analyses, (31) 341.
 stem analysis for growth studies, (38) 46.
 street—
 and park, for Wisconsin, (37) 145.
 of New York City, (34) 345.
 planting, (33) 143.
 roadside, and farm, (40) 447.
 selection, planting, and care, (27) 541.
 study of in primary grades, (28) 897.
 tannin content and starch formation in, (27) 828.
 taper curves for, (33) 739.
 tests at Belle Fourche, (40) 340.
 textbook, (30) 196; (36) 794.
 timber and rubber, of Costa Rica, (27) 147.
 timber, of Philippines, (40) 152.
 timber, of United States, (27) 147.
 tolerance ranges, limiting factors, (40) 152.
 toxic atrophy, (37) 147.
 transpiration in, (27) 522.
 transplanting, (27) 491; (35) 37; (38) 144.
 treatise, (26) 140; (28) 642; (29) 842.
 tropical, growth and rest of, (35) 431.
 tropical, periodicity, (27) 42, 43.
 use of explosives in tillage, (39) 445.
 valuation of form, (26) 338.
 varieties, (38) 641.
 varieties for Hawaii, (38) 145.
 volume—
 and length measurements, (32) 543.
 determination, (33) 843.
 tables for, (27) 348; (34) 641, 743; (35) 748.
 tables, frustum form factors in, (31) 640.
 water conductivity of wood, (40) 821.
 water table as factor in distribution, (30) 223.
 winter—
 and frost injuries, (29) 851.
 identification, (26) 442.
 injuries, (31) 49.
 winterkilling, (27) 548.
 wood-destroying fungi on, (39) 255.
 wood-oil, of China and Japan, (30) 46.
 young, harmful effect of grass and weeds on, (33) 645.
- Trefoil—
 as green manure, (40) 24.
 bird's-foot, liming experiments, (40) 322.
 pollination experiments, (37) 735.
 rate of seeding tests, (27) 836.
 seed, germination energy of, (29) 538.
 seed, vitality, (27) 740.
 varieties, (27) 836.
 yellow, culture, (30) 335.
- Trehalose, acetates of, (34) 408.
- Trematode—
 larva encysted in a crab, (37) 558.
 parasite of mosquitoes, (38) 562; (39) 660.
- Trematodes—
 injurious to horses, (26) 384.
 injurious to muskrats, (29) 484.
 larval, from fresh-water snails, (39) 556.
 of Australia, (32) 399; (33) 863.
 of Australian birds, (39) 556.
 of North America, (33) 863.
 parasitic in equines, (27) 583.
- Trematopygus ericampoididis n.sp., description, (34) 363.
- Trembles in sheep, etiology, (33) 279.
- Trembling or louping ill in sheep, studies, (29) 681; (36) 83.
- Tremella fuciformis, culture in Japan, (35) 347.
- Trench—
 diarrhea, carriers, (40) 884.
 fever, studies, (39) 658; (40) 550.
- Trenching machinery, description, (34) 583.
- Treponema pallidum, studies, (27) 551.
- β -Triacetylmethylxylosid, notes, (34) 408.
- Trianaodes bicolor, notes, (37) 847.
- Trialeurodes vaporariorum, *see* Aleyrodes tabaci.
- Triammonium citrate, manufacture and analyses, (32) 205.
- Triaspis—
 spp., notes, (27) 864.
 vestitica n.sp., description, (29) 563.
- Triatoma—
 geniculatus, relation to mal de caderas, (30) 785.
 infestans, relation to mal de caderas, (31) 82.
- Tribolium—
 castaneum, studies, (38) 356; (40) 855.
 confusum, remedies, (27) 258.
 ferrugineum, notes, (34) 754.
 navale, notes, (30) 655.
 spp. in mills and warehouses, (39) 464.
 spp., notes, (26) 453.
- Tribroma bicolor, character and habits, (35) 730.
- Tribulus—
 spp., analyses and digestibility, (27) 871.
 terrestris, analyses, (33) 466.
 terrestris, analyses and digestibility, (32) 167.
- Tricalcium—
 arsenate, studies, (39) 310.
 carbonate as affected by calcium carbonate, (26) 527.
 phosphate—
 determination, (32) 409.
 fertilizing value, (36) 626.
 for infants, (32) 857.
 formation in mixed fertilizers, (34) 26.
 solubility, (39) 23.
- Tricella acuminata n.g. and n.sp., description, (27) 746.
- Trichina—
 biology, (34) 83.
 encysted forms, in polar bear, (37) 483.
 inspection, guide, (28) 482.
 larvae in cerebrospinal fluid, (34) 881.
- Trichinae—
 destruction by cold, (36) 680.
 detection in pigs, (26) 485.
 in pork in relation to sale warranty, (36) 662.
 intestinal, studies, (40) 476.
 transmission, (39) 685.
- Trichinella spiralis—
 as affected by cold storage, (31) 356.
 as affected by radium, (37) 578.
 larvae as affected by cold, (30) 881.
 larvae as affected by refrigeration, (34) 680.
 life history, (37) 578.
 notes, (26) 84.
 studies, (34) 83.
- Trichiniasis—
 diagnosis, (26) 84.
 review of literature, (34) 478.
 X-ray appearances, (39) 589.
- Trichinosis—
 immunization, (37) 784.
 in Denmark, (38) 787.
 in dogs and cats, (29) 83.
 in United States, (34) 276.
 notes, (30) 685.
 serum diagnosis, (26) 281.
 serum therapy in, (40) 184.
 studies, (28) 79; (36) 181.
- Trichocampus viminalis, notes, (30) 655.
- Trichosoma tibialis, notes, (30) 657.
- Trichlorethylene—
 as a soy-bean oil extractor, (36) 580.
 use in determination of fat, (26) 507.
- Trichobaris texana—
 destruction by white fungus, (26) 454.
 n.sp., description, (36) 556.
- Trichocephalus—
 affinis, destructive to deer, (26) 653.
 depressusculus, embryology, (30) 555.
- trichiurus—
 dissemination by flies, (30) 659.
 relation to appendicitis, (26) 678.
 transmission by flies, (38) 563.
- Trichochoous (Pristoscelis) texanus, notes, (28) 451.
- Trichodectes—
 hermsi—
 n.sp., description, (34) 274.
 n.sp., notes, (35) 255.
 notes, (34) 552.
 scalaris, control, (40) 652.
 sphaerocephalus, notes, (32) 377.
 spp., biology and remedies, (38) 184.

- Trichoderma**—
 ammonifying power, (32) 29.
königl—
 notes, (30) 150.
 on apple roots, (36) 351.
 on rubber, (32) 347.
 relation to sweet potato ring rot, (26) 748.
 studies, (34) 156; (40) 347.
lignorum, notes, (28) 246.
lignorum, studies, (34) 226.
 sp., relation to apple rot, (33) 348.
 spp. on conifer seedlings, (40) 545.
- Trichogramma**—
 evanescens, development, (37) 856; (39) 265.
 evanescens, studies, (40) 265.
 japonicum, notes, (26) 63.
minutum—
 notes, (29) 53, 658; (31) 752.
 parasitic on bud moth, (34) 250.
 parasitism, (33) 353.
 studies, (37) 460, 569; (39) 265.
 pretiosa—see also *Trichogramma minutum* and *Pentarthron minutum*.
 notes, (27) 356.
 parasitic on bud moth, (34) 250.
 sp., life history and habits, (30) 256.
 spp., notes, (30) 759.
 spp., parasitic on codling moth, (34) 358.
 spp., rearing experiments, (38) 164.
- Trichogrammatidae** of Australia, (28) 563; (39) 154.
Trichogrammatodea signiphoroides n.sp., description, (31) 355.
Trichogrammatomyia tortricis n.g. and n.sp., description, (36) 260.
Trichogramminae, European, synopsis, (35) 661.
- Tricholaena**—
 rosea, analyses, (31) 863.
 rosea, notes, (26) 362.
 spp., analyses and digestibility, (32) 167.
 teneriffae, analyses, (27) 68; (28) 463.
- Tricholoma**—
 nudum, variations in, (32) 822.
 personatum, prevalence in South Africa, (29) 461.
- Tricholyga sorbillans**, notes, (27) 865.
Trichomagdalis n.g. and n.spp., notes, (30) 357.
Trichomalus apantelotenus n.sp., description, (26) 63.
- Trichomonas**—
 intestinalis, studies, (40) 186.
 notes, (26) 246.
 pullorum, notes, (37) 785.
- Trichomoniasis**—
 in chicks, (37) 784.
 intestinal, (37) 183.
 intestinal, tissue-infection in, (36) 781.
- Trichomyia urbica**, biology, (32) 59.
Trichomiscus roseus, notes, (31) 758.
Trichophyton felineum, notes, (28) 783.
Trichopria capensis, parasitic on fruit flies, (31) 456.
- Trichoseptoria fructigena**—
 notes, (27) 449; (29) 247; (30) 647; (38) 647.
 on quince and apple, (34) 54.
- Trichosiphum** n.spp., description, (38) 857.
Trichosoma strumosum, notes, (31) 287.
Trichosomum meleagris gallopavo n.sp., notes, (28) 83.
- Trichosphaeria sacchari**, notes, (26) 445; (36) 846; (40) 157.
- Trichostibas parvula**, notes, (31) 752.
- Trichostromylus**—
 extenuatus, notes, (28) 481.
 n.spp., descriptions, (29) 555.
 spp. parasitic in man, (36) 577.
- Trichothecium** sp., notes, (27) 45.
- Trichothrips nigricans**, notes, (27) 155.
- Trichotoxon heyneimanni**, notes, (29) 853.
- Trichuris**—
 crenata, notes, (37) 779.
 ovis in Philippines, (37) 277.
 spp., physiological investigations, (31) 679.
 (*Trichocephalus*) *trichiurus*, dissemination by flies, (30) 659.
- Tricolepsis** sp., notes, (35) 364.
- Tricresol**—
 as a serum preservative, (33) 280.
 as a soil sterilizer, (26) 322.
 toxicity, (38) 283.
- Tridens flavus**—
 cyanogen in, (33) 665.
 hydrocyanic acid in, (35) 413.
- Trifolium**—
 alexandrinum—
 culture in Hawaii, (32) 730.
 description and use, (30) 733.
 notes, (29) 140.
 angulatum, notes, (30) 440.
 ash constituents of, (30) 334.
 fragiferum—
 culture experiments, (30) 632.
 introduction into Victoria, (26) 833.
 lupinaster—
 culture experiments, (32) 36; (36) 436.
 tests, (33) 632.
 parviflorum, notes, (30) 440.
 perenne, notes, (30) 434.
 pratense perenne, notes, (31) 134.
 repens as an adulterant of white clover seed, (26) 40.
 resupinatum as a forage crop, (38) 230.
 spp., comparative morphology, (31) 624.
 studies, (29) 522.
- Triglyphothrix striatidens** in United States, (36) 859.
- Trigona clypeata**, notes, (27) 865.
- Trigonella foenum-graecum**—
 as green manure, (39) 31.
 culture experiments, (30) 228.
- Trigonellin**, occurrence in—
 stachys tubers and citrus leaves, (26) 107.
 sugar beets, (28) 810.
- Trigonoderus** spp. of North America, (38) 768.
- Triheptadecylene**, studies, (30) 110.
- Triketohydrindene hydrate**, use for detection of protein, (26) 804; (35) 207.
- Trimagnesium phosphate**, fertilizing value, (36) 626.
- Trimeromerius maculatus** n.g. and n.spp., description, (35) 262.
- Trimethylamin**—
 assimilation by plants, (26) 32.
 in dried herring roe, (29) 863.
 in urine, (32) 764.
 isolation from soils, (28) 418.
- Trinitrotoluene waste**, utilization, (29) 319.
- Triodontophorus** spp.—
 anatomy and biology, (28) 887.
 notes, (39) 686.
- Trionymus**—
 n.spp., description, (40) 262.
 violascens n.spp., description, (29) 255.
- Trioxys auctus**, notes, (31) 757.
- Trioxa**—
 alacris—
 notes, (37) 157, 849.
 occurrence in California, (26) 859.
 studies, (39) 360.
 tripunctata, notes, (28) 752.
- Triozinae**, notes, (26) 149.
- Tripe**, preparation, (28) 860; (35) 317.
- Triphenin**, periodids of, (34) 502.
- Triphleps**—
 insidiosus—
 notes, (28) 250; (32) 654.
 parasitic on red spider, (32) 157.
 relation to corn-ear rot, (36) 55.
 tristicolor, (29) 261.
- Tripodosporium tenue** n.spp., description, (36) 245.
- Tripotassium nitrophenoldisulphonate**, preparation, (26) 110.
- Tripsacum**—
 and *Euchlaena*, hybrid between, (36) 27, 28.
 dactyloides, analyses, (27) 68.
 dactyloides as host of curlew bug, (27) 162.
- Triraphis ramosissima**, analyses and digestibility, (32) 167.
- Trirhabda**—
 brevicollis, notes, (31) 751; (33) 59.
 canadensis, notes, (35) 656.
- Trissolcus trinidadensis** n.spp., description, (31) 554.
- Tristania conferta**, strength and elasticity tests, (27) 43.
- Trithiobenzaldehyde**, isolation from soils, (28) 418.
- Triticum**—
 and *Aegilops*, hybrids between, (30) 341.
 dicoccum dicoccoides, notes, (28) 761.
 eloboni, inheritance in, (40) 525.
 monococcum, origin, (30) 531.
 polonicum, inheritance in, (40) 140, 525.
 spp., chromosome numbers in, (27) 636.
 spp., relationship, (26) 827.
 vulgare and *T. monococcum*, cross between, (30) 140.

- Tritoxa flexa*, notes, (29) 454; (34) 360.
Triumfetta semitriloba, description, (28) 829; (30) 35.
Trocarocephalus strangulatus, notes, (29) 858.
Trogoderma tarsale—
 larvae of, (38) 467.
 life history and habits, (29) 55.
Trollius caucasicus, carotinoid content, (31) 803.
Trombidiasis—
 in goats, (31) 480.
 of man and domestic animals, (31) 284.
Trombididae, synopsis, (27) 565.
Trombidium—*see also* Chiggers.
akamushi, studies, (40) 554.
holosericeum, remedies, (34) 682.
 sp., notes, (33) 354.
Tropaeolum, inheritance in, (36) 729.
 Tropical—
 diseases, manual, (32) 177.
 medicine and hygiene, treatise, (35) 379.
Tropidia quadrata, notes, (36) 460.
Tropidobracon meromyzae n.sp., description, (31) 355.
Tropidocerca, development of eggs, (33) 631.
Tropidopria conica, notes, (26) 254.
Tropidosteptes cardinalis, notes, (35) 255.
 Tropin research, technique and methods, (26) 676.
Tropinota turanica, biology, (31) 159.
 Tropins—
 and opsonins, bacterial, notes, (32) 78.
 bacterial, determination in horse serum, (27) 182.
 Tropisms in lupine seedlings, (31) 325.
 Trout—
 brook, poisoning by rose chafers, (35) 279.
 brown, respiratory exchange in, (32) 565; (33) 661.
 growth, variability, and correlation in, (28) 173.
 Trout-perch breeding in rice fields, (30) 676.
 Truck crop—
 aphids, control, (40) 163.
 diseases, (39) 354, 649.
 diseases in Florida, (38) 48.
 diseases in Texas, (26) 645.
 diseases, notes, (28) 238; (32) 641; (38) 648.
 industry in United States, (37) 543.
 insects in Louisiana, (40) 57.
 organization in Monmouth Co., N. J., (39) 746.
 pests in Georgia, (35) 461.
 seed beds, steam sterilizing, (40) 135.
 Truck crops—
 culture—
 experiments, (36) 839.
 in Georgia, (34) 436.
 south Mississippi, (30) 639.
 southern New Jersey, (35) 643.
 West Virginia, (30) 40.
 on Yuma irrigation project, (29) 226.
 fertilizers for, treatise, (29) 837.
 insects affecting, (28) 156, 238, 854; (29) 853; (30) 853; (32) 753; (34) 851; (35) 461; (37) 157, 356, 459; (38) 157, 257, 459, 558.
 irrigation experiments, (33) 683.
 irrigation in Florida, (36) 784.
 marketing, (31) 894.
 marketing cooperatively, (30) 591.
 on Truckee-Carson project, (28) 839.
 protection against frost, (26) 214; (33) 237.
 spraying costs, (38) 558.
 treatise, (30) 639.
 varieties, (28) 533; (29) 540.
 Truck—
 farming, handbook, (27) 644.
 farms in New Jersey, (40) 299.
 farms, renting in southwestern New Jersey, (35) 892.
 gardening—
 in Florida, treatise, (26) 237.
 North Carolina, (28) 339.
 gardens, automatic irrigation for, (28) 382.
 growers' cooperative organization in Virginia, (27) 389.
 marketing, cooperative, (40) 488.
 soils of Atlantic coast region, (29) 416.
 Truckers' association in Maryland, (26) 791.
 Trucking—
 in Florida, treatise, (30) 442.
 Ohio and Kanawha River valleys, (31) 44.
 Texas, (31) 439.
 Trucks, *see* Motor trucks.
 Truffle sausages, adulteration, (26) 258.
 Truffles, conservation, (36) 615.
 Trumbull County experiment farm, (35) 94.
 Trumpet creeper—
 leaf miner, notes, (27) 347.
 notes, (27) 346.
 Trypsinase, activity in diseased potatoes, (26) 548.
 Trypanblue, use against—
 bovine piroplasmosis, (32) 273, 682.
 canine piroplasmosis, (26) 882.
 equine biliary fever, (32) 278.
 infectious anemia, (26) 483.
 Texas fever, (26) 382; (29) 658.
 tuberculosis, (33) 481.
Trypanidae, Ethiopian genera, (39) 362, 467.
Trypanoplasma, notes, (26) 246.
 Trypanosoma—
 americanum, studies, (27) 82; (29) 680; (30) 882.
 boylei n.sp., notes, (27) 555.
 brucei, life cycle, (35) 366.
 congolense infection in swine, (38) 485.
 cruzi, transmission by Reduviidae, (30) 853.
 cruzi, transmission by Rhipicephalus sanguineus, (31) 159.
 equinum, transmission by Chrysops spp., (31) 82.
 equiperdum—
 in European Russia, (29) 479.
 infection in dogs, (38) 484, 485.
 morphology, (30) 282.
 studies, (26) 88.
 treatment, (28) 478.
 evansi—
 relation to flies, (27) 58.
 schizogony in, (28) 180.
 transmission by insects, (31) 777; (37) 180.
 transmission by lice, (28) 756.
 franki, relation to T. theileri, (26) 84.
 gallinarum, development in Glossina palpalis, (27) 787.
 gambiense—
 development in ducks, (27) 787.
 development in Glossina palpalis, (26) 150.
 relation to antelopes, (28) 80.
 hippicum—
 infection of mules by, (27) 82.
 investigations, (27) 480.
 lesions caused by, (26) 679.
 notes, (27) 783; (28) 784.
 reduction of virulence in, (26) 884.
 transmission by house flies, (26) 656, 884; (27) 457.
 leporis-sylvaticus n.sp., description, (27) 81.
 lewisi—
 pathogenicity, (31) 82.
 studies, (33) 159.
 n.spp., descriptions, (27) 82; (34) 480.
 rhodesiense—
 development in Glossina morsitans, (28) 255.
 relation to game, (34) 187.
 simiae n.s.p., studies, (30) 79.
 spp., notes, (27) 783, 884.
 spp., occurrence in Gambia, (26) 486.
 spp., studies, (30) 80.
 spp., transmission by Glossina spp., (26) 151.
 spp., transmission by stable fly, (26) 150.
 theileri—
 notes, (30) 782.
 of cattle in Panama, (39) 84.
 vespertilionis, nonpathogenicity for laboratory animals, (33) 552.
 Trypanosome—
 anaphylatoxin, studies, (37) 578.
 disease of camels, notes, (26) 85.
 disease of horses, immunization, (28) 784.
 diseases—
 diagnosis, (27) 480, 783; (30) 580; (36) 578.
 immunity to, (29) 379.
 immunization, (29) 380; (32) 81.
 in Anglo-Egyptian Sudan, (30) 679.
 in German East Africa, (30) 781.
 studies, (30) 381.
 transmission by game, (30) 781.
 treatise, (29) 77.
 treatment, (31) 284.
 from Conorhinus rubrofasciatus, (27) 555.
 new, in cattle in Uruguay, (26) 584.
 of Vinchuca, studies, (34) 580.
 Trypanosomes—
 agglutination tests with, (28) 282.
 as affected by liver and serum, (30) 381; (32) 780.
 concentrating in peripheral blood, (39) 84.
 dead, immunizing with, (32) 374.
 development in invertebrate hosts, (32) 399.

- Trypanosomes**—Continued.
 differentiation, (30) 580.
 East African, antigenic properties, (33) 282.
 effect on heat production in rabbits, (29) 479.
 filterability, (34) 880.
 immunity reactions with, (29) 176.
 in a cow in England, (28) 885.
 beef cattle, (28) 284.
 Canadian mammals, (27) 81; (31) 80.
 cattle, studies, (26) 84.
 game and domestic stock in northeastern Rhodesia, (30) 683.
 German cattle, (30) 782.
Glossina morsitans, (30) 781.
 healthy cattle, (28) 584.
 mammals, identification and classification, (26) 84.
 Nyasaland, (30) 79, 80.
 Rhodesia, (27) 783.
 Russia, (34) 187.
 Zululand, (29) 476.
 morphology, (28) 282; (30) 282.
 notes, (27) 181.
 passage into milk, (34) 355.
 photomicrographs of, (29) 478.
 recovery from rat blood, (40) 85.
 transmission by—
 insects, (27) 783.
 stable flies, (26) 150.
 tsetse flies, (32) 350.
- Trypanosomiasis**—
 chemotherapy, (36) 679.
 equine, in Morocco, (38) 184.
 experimental, studies, (38) 484, 485.
 immunization, (32) 181.
 in guinea pigs, treatment, (34) 276.
 horses, diagnosis, (34) 385.
 horses in Morocco, (40) 784.
 swine, (38) 485.
 relation to dipping, (34) 186.
 resistance of goats and sheep to, (26) 84.
 studies, (34) 576.
 transmission by flies, (37) 879.
 treatment, (29) 476, 676; (35) 379; (40) 583, 781.
- Trypaned, use against tuberculosis**, (33) 481.
- Trypeta**—
ludens, see *Anastrepha ludens*.
musae, notes, (27) 54.
 (Nyennis) scutellaris, notes, (36) 657.
- Trypetidae**, trapping, (40) 169.
- Trypodendron quercus**, notes, (31) 61.
- Tryporemon**—
latithorax—
 n.g. and n.sp., description, (30) 459.
 notes, (38) 864.
sanfordi n.sp., description, (38) 864.
- Trypsin**—
 effect on guinea pigs and dogs, (34) 276.
 use against foot-and-mouth disease, (31) 282.
- Trypsin**—
 action as affected by stimulants, (26) 159.
 and pepsin, reaction between, (31) 609.
 definition, (32) 711.
 destruction by pepsin and acid, (38) 664.
 digestive power, (31) 860.
 generation from trypsinogen, (29) 662.
 hydrolysis of casein by, (29) 202.
 in eggs, (28) 64.
 in latexes, (31) 409.
 notes, (40) 408.
 properties, (32) 858.
 protein cleavage by, (36) 108.
 solutions, determining relative activity, (28) 18.
 trypsinogen, properties, (32) 858.
 tryptic proteolysis as affected by heat, (31) 107.
- Tryptophan**—
 determination, (28) 411.
 determination in proteins, (34) 505.
 effect on growth, (35) 268.
 effect on nutritive value of diet, (36) 265.
 extraction from products of tryptic digestion of caseinogen, (40) 611.
 in yeast protein, (36) 501.
 indispensability for maintenance, (31) 559.
 rôle in purin metabolism, (37) 265.
- Tryptoproteases**, detection, (35) 414.
- (Tryptus) Microcryptus osculatus**, notes, (38) 565.
- Trysacum dactyloides**, analyses, (27) 469.
- Tsetse flies**—see also *Glossina* spp.
 biology, (32) 350, 847.
- Tsetse flies**—Continued
 rôle in transmission of trypanosomes, (32) 350.
 studies, (35) 466.
- Tsuga**—
canadensis, length of tracheids in, (33) 143.
heterophylla, notes, (27) 846.
- Tsutsumagushi disease**, carrier, (37) 858; (39) 870.
- Tuber**—
 diseases in Saxony, (32) 749.
 diseases, notes, (31) 539, 841.
 tonic, fungicidal value, (37) 447.
- Tubercle bacilli**—
 absorption in intestinal canal, (28) 882.
 acid-proofness in, (30) 782.
 action of certain products, (27) 681.
 action of gland extracts on, (38) 81.
 action of large doses, (28) 283.
 anaphylaxis from, (30) 481.
 antigens in cultures of, (31) 778.
 as affected by—
 antiformin, (31) 881.
 extracts of rabbit lungs, (26) 484.
 glycerol esters, (27) 681.
 Roentgen rays, (40) 887.
 attenuated, prophylaxis with, (31) 583.
 avian, caseous degeneration, (26) 282.
 avian, differentiation from other types, (38) 81.
 avian, studies, (27) 686.
 behavior toward fat dyes, (30) 81.
 biological characteristics, (28) 282.
 biology, (30) 481; (31) 778.
 bovine, in children, (29) 382; (32) 477.
 bovine, in man, (29) 382.
 bovine, viability, (29) 381.
 branched forms, (30) 782.
 carbon dioxide requirements, (38) 588.
 cessation of tissues by, (33) 480.
 change of type, (28) 283.
 chemistry of, (30) 182.
 composition, (27) 286.
 cultural and pathogenic properties, (26) 884.
 culture, Koch's, lesions produced by, (26) 178.
 destruction by chemicals, (33) 481, 482.
 destruction by electricity, (35) 176, 378.
 destruction in milk, (33) 78.
 detection, (26) 85, 284; (29) 583.
 detection in—
 blood, (29) 480; (30) 683; (32) 878.
 dust, (32) 181.
 excreta of bovines, (29) 383, 384.
 milk, (31) 584.
 pleural fluids, (28) 377.
 urine, (32) 878.
 determination in sputum, (37) 180.
 determination of viability, (33) 877.
 dissemination by cattle, (31) 84.
 dissolution in tubercular organism, (28) 283.
 dried, virulence, (35) 883.
 effect of daylight and drying on, (34) 880.
 effect on fats, (27) 783.
 effect on phosphatids of rabbits' organs, (28) 377.
 elimination in milk of tuberculous women, (27) 480; (28) 283.
 elimination with the bile, (30) 483, 581.
 enzymes of, (37) 275; (38) 887.
 excretion into milk, (26) 777, 884; (29) 583.
 fate outside the animal body, (29) 77.
 ferment-inhibiting substances in, (32) 274.
 formation of protein and mucin by, (31) 284.
 from bovines, examination, (26) 281.
 Gosio's vital reaction for, (31) 880.
 granulated, detection, (31) 777.
 granulated, staining, (31) 777.
 growth as affected by anilin dyes, (37) 481.
 growth in arsenic solutions, (35) 281.
 human and bovine—
 differentiation, (26) 582, 783; (27) 480; (29) 382; (30) 283; (32) 181; (38) 285.
 double infection with, (31) 580.
 effect of daylight and drying on, (33) 282.
 in children, (29) 286; (32) 878.
 investigations, (26) 281.
 relationship, (27) 579, 783, 784, 884, 885.
 relative importance, (26) 178, 680.
 separation, (31) 580, 778, 881.
 human, in milk of vaccinated cows, (29) 583.
 human, metabolism of, (33) 769.
 human type, in cattle, (34) 581.
 hydrolysis, (28) 585.

Tubercle bacilli—Continued.

- identifying, (38) 485.
 - immunizing tests on guinea pigs, (34) 82.
 - in apparently nontuberculous animals, (34) 277.
 - bile of tuberculous animals, (29) 582; (31) 481.
 - blood of bovines, (33) 84.
 - blood stream of tuberculous subjects, (28) 283.
 - butter, (31) 576; (37) 481.
 - certified milk, (37) 881.
 - cheese, (28) 278.
 - circulating blood, (26) 281; (27) 480; (30) 283, 581, 683, 783; (31) 83; (32) 476.
 - dairy products, (28) 372.
 - Edinburgh milk supply, (32) 674.
 - feces, blood, and milk of cows, (32) 376.
 - feces of dairy cattle, (37) 879.
 - healthy udder tissue of cows, (31) 777.
 - market milk, (31) 674.
 - milk, (36) 278, 573.
 - milk and lymphatic glands of bovines, (26) 281.
 - milk and milk products, (27) 878.
 - nontuberculous respiratory passages, (33) 678.
 - sputum, (29) 382, 582; (30) 482; (36) 383; (38) 486.
 - sputum and other body fluids, (36) 680.
 - street dust, (38) 885.
 - uncooked food, (26) 880.
 - whey, resistance to heat, (26) 779.
 - indicators for, (40) 584.
 - inhalation of, (26) 179.
 - intrapertitoneal lysis of, (31) 778.
 - isolation and cultivation, (35) 783.
 - isolation and preparation from diseased organs, (29) 381.
 - lipase of, (29) 177.
 - lipoid-free, immunizing tests with, (29) 782.
 - longevity in milk, (37) 378.
 - longevity outside animal body, (38) 81.
 - mammalian, fate of in sparrows and chickens, (36) 81.
 - microscopical detection, (33) 387.
 - modification by passage through animals, (26) 886.
 - new culture medium for, (29) 380; (36) 383.
 - nutrition with mineral substances, (29) 381.
 - of swine tuberculosis, (27) 287.
 - passage through the skin, (27) 183.
 - permeability for fat soluble dyes, (29) 177.
 - permeability of ultramicroscopic forms, (28) 677.
 - potentiometer test, (38) 284.
 - reactions to sperm oil and its constituents, (35) 784.
 - resistance of animals toward, (27) 381.
 - resistance of cows toward, (27) 383.
 - resistance to heat, (26) 582; (35) 487.
 - retention in lymphatic glands, (30) 483.
 - sensitiveness to acids, (38) 80.
 - spores, studies, (29) 582.
 - stability in living animals, (26) 885.
 - staining, (26) 379, 887; (39) 82.
 - staining with carbol fuchsin, (37) 180.
 - studies, (33) 178.
 - thermal death point, (36) 474, 877.
 - tissue reactions, (38) 485.
 - types, (28) 780; (33) 85; (34) 575; (38) 588.
 - virulence, (38) 380.
 - virulence in "rayed caseation," (31) 481.
 - virulence of different types, (32) 677.
 - vitality of, (29) 178.
 - vitality outside the body, (37) 782.
- Tubercle—**
- bacteria of legumes, studies, (26) 824.
 - endotoxin, effect on opsonins in healthy rabbits, (26) 180.
 - wax, antigenic properties, (35) 883.
- Tubercles—**
- of fowls, fat content, (28) 785.
 - permeability for—
 - fat-soluble dyes, (29) 177.
 - iodine compounds and proteins, (28) 584.
 - vital staining of, (30) 80.
- Tubercular—**
- infection, defense of organism against, (35) 784.
 - processes, determination of age, (29) 381.
 - septum, nasal, in bovines, (27) 184.
- Tubercularia coccicola** n.s.p., description, (39) 52.
- Tuberculides** in bovines, (32) 181.

Tuberculin—

- activator for, (27) 885.
 - anaphylaxis, notes, (27) 381.
 - aqueous, precipitation, (26) 85.
 - avian, diagnostic value, (26) 380.
 - Besredka, diagnostic value, (33) 283.
 - chemistry of, (30) 182.
 - composition, (31) 285.
 - delayed reactions following injection, (34) 187.
 - diagnostic value, (26) 485, 676; (35) 575.
 - distribution, (28) 476.
 - effect on—
 - autolysis, (27) 183.
 - nontubercular guinea pigs, (29) 480.
 - the healthy organism, (31) 182.
 - from different tubercle bacilli, tests, (31) 482.
 - Hochst's new, tests, (26) 180.
 - hypersensitiveness to, (30) 283; (31) 482.
 - in diagnosis and treatment, manual, (30) 284, 382.
 - reaction—
 - analyses, (32) 879.
 - conjunctival, diagnostic value, (35) 384.
 - diagnostic value, (26) 180.
 - in bovines, studies, (27) 481.
 - pigs, (33) 877.
 - studies, (35) 883.
 - retests with, (29) 885.
 - test—
 - and retest, (38) 380.
 - application, (38) 179.
 - avian, value, (36) 480.
 - certificates for cattle exhibits, (38) 179.
 - combined and follow-up systems, (36) 383.
 - description, (38) 81.
 - effect on milk yield, (39) 288.
 - for chickens, (27) 181.
 - East Indian buffaloes, (26) 378.
 - fowls, (31) 582.
 - guinea pigs, (39) 288.
 - guinea pigs and rabbits, (33) 283.
 - imported cattle in Germany, (26) 282.
 - in certified dairies, (34) 880.
 - Hawaii, (31) 177.
 - North Carolina, (29) 383.
 - Wisconsin, (32) 275.
 - intradermal, application to eyelid, (32) 477.
 - intradermal, notes, (27) 382; (31) 177.
 - intrapalpebral and intradermic palpebral, (32) 780.
 - intrapalpebral, studies, (34) 385.
 - investigations, (26) 282, 283; (35) 576.
 - limitations, (26) 783; (36) 676.
 - new methods, (27) 77.
 - notes, (26) 583; (27) 381, 576; (29) 79, 885; (30) 180, 482; (34) 274; (36) 378, 474.
 - nullifying, (28) 283.
 - paper on, (29) 499.
 - reliability, (29) 178, 179.
 - studies, (33) 387; (34) 278.
 - subcutaneous, diagnostic value, (26) 283.
 - technique, (38) 182.
 - thermal, diagnostic value, (26) 379.
 - value and use, (27) 83.
 - tests—
 - and post-mortem findings, studies, (26) 282.
 - comparison, (29) 583.
 - notes, (39) 679.
 - potency, (40) 680.
 - therapeutic value, (32) 182, 183.
 - turtle, use against tuberculosis, (30) 284.
 - use, (34) 679.
- Tuberculina—**
- maxima—
 - studies, (34) 750.
 - use against pine blister rust, (31) 50.
 - nomuriana n.s.p., description, (35) 348.
 - sp. attacking Cronartium, (38) 253.
- Tuberculinization**, historical survey, (39) 890.
- Tuberculinum purum**, use against tuberculosis, (26) 284.
- Tuberculo-protein**, hypersensitiveness to, (26) 181, 182; (30) 283.
- Tuberculosan—**
- notes, (29) 886; (31) 882.
 - tests, (26) 680, 681; (29) 384.
- Tuberculosis—**
- active and inactive in bovines, differentiation, (29) 583.
 - and blastomycosis, (39) 187.

Tuberculosis—Continued.

and our livestock industry, (40) 681.
and pearl disease, (30) 582.
antigen for, (29) 583; (38) 786.
antigen for complement fixation, (36) 81.
as affected by organ extracts, (26) 484.
atypical, in slaughtered animals, (20) 882.
avian—
 and mammal, relationship, (26) 178.
 blood picture in, (29) 285.
 diagnosis, (30) 381; (34) 880; (36) 480.
 etiology and control, (33) 389.
 growth and virulence of causative organisms, (30) 482.
 immunization, (36) 881.
 in mammals, (26) 583.
 in pigs, (33) 282, 283; (34) 277.
 in swine, (40) 185.
 notes, (27) 181, 381; (29) 273; (32) 480, 585, 781;
 (35) 576, 786; (36) 179.
 studies, (27) 686; (28) 476, 883; (31) 581, 582.
 transmission to hogs, (31) 683.
 transmission to man, (31) 581.
biochemistry and chemotherapy, (28) 584; (29)
 177; (30) 80; (33) 481, 482, 677, 877; (35) 181; (39)
 685.
blood transfusion in treatment, (40) 385.
bovine, (39) 582, 679.
bovine—
 and porcine, virulence of apparently sound
 tissue in, (37) 583.
 causes, (26) 178.
 continuous temperature records, (36) 82.
 control, (27) 286; (38) 687, 887.
bovine, control in—
 Colorado, (32) 581.
 dairy herds, (38) 81.
 Germany, (27) 482.
 Great Britain, (30) 382.
 Hawaii, (34) 477; (39) 679.
 Minnesota, (38) 282.
bovine—
 cycle, (27) 83.
 detecting, (26) 583; (40) 782.
 diagnosis, (26) 484, 679; (27) 184, 286, 382, 482;
 (28) 380, 679; (29) 178, 885; (30) 883; (31)
 379; (33) 387, 481; (35) 74; (36) 579; (37) 80;
 (38) 887.
 early stages, (29) 286.
 eradication, (29) 78, 286, 287; (30) 273, 383;
 (32) 780; (33) 85; (37) 379; (38) 82, 380, 686.
 frequency, (26) 178.
 immunization, (28) 180; (29) 384, 480, 499,
 884; (30) 482; (31) 85, 779; (32) 679; (34) 185,
 575, 581, 678; (38) 81.
in Argentina, (40) 86.
 children, (34) 673; (37) 782.
 Hawaii, (37) 374.
 horses, (37) 378.
 Illinois, (34) 185.
 man, (37) 879.
 Queensland, (38) 182.
 the Punjab, (39) 491.
increasing resistance to, (34) 478.
infectiousness, (31) 284.
intradermal test for, (34) 185.
investigations, (26) 887; (27) 82; (29) 178; (31)
 881.
nature and treatment, (28) 585.
New York commission on, (31) 498.
notes, (27) 682, 885; (29) 79; (30) 381; (31) 80;
 (36) 81.
notes and treatment, (28) 679.
nurse cow factor, (38) 179.
physical examination and clinical diagnosis,
 (34) 184.
prevention, (29) 886.
prophylaxis in, (26) 485.
serous, (33) 282.
spread among farm animals, (34) 678.
studies, (36) 579; (40) 86.
transmission by swine, (38) 684.
transmission to man, (28) 375, 585, 780; (30)
 382, 581; (31) 285, 779; (32) 271; (33) 85.
transmission to offspring, (33) 278.
treatise, (28) 883; (30) 82; (38) 286.
treatment, (29) 384; (32) 182.
canine and human, relation, (35) 181.
caseation in, (32) 274.
cause and eradication, (29) 179.

Tuberculosis—Continued.

caused by inhalation, (30) 381; (32) 181, 274.
causes of, treatise, (39) 890.
chemotherapy, (29) 481; (36) 278, 279; (37) 379.
complement fixation in, (28) 885; (39) 82; (40)
 481, 886, 887.
complement-fixing antibodies in, (31) 882; (32)
 181.
control, (39) 288, 390, 582, 679, 862; (40) 380, 577,
 681, 778.
control by milk commissions, (38) 381.
control in—
 Belgium, (26) 378.
 England, (36) 275.
 France, (27) 885.
 Germany, (27) 784.
 Michigan, (37) 274.
 Norway, (33) 85.
 Oregon, (37) 374.
 Pennsylvania, (37) 577.
 Sweden, (28) 781.
 Wisconsin, (32) 275.
cutaneous, in man, (28) 180.
delayed or latent infection, (37) 378.
diagnosis, (26) 85, 180, 181, 283, 284, 379, 578,
 582, 783; (27) 480, 481, 580, 681, 784, 885; (28)
 284, 377; (29) 285, 382, 583; (30) 482; (31) 181,
 379, 481, 878, 880; (32) 179, 181, 183, 376, 878;
 (34) 81; (35) 575; (36) 181, 278, 676, 881; (40) 680;
diagnosis—
 complement-fixation test, (37) 180, 481.
 intrapalpebral test, (36) 579, 779.
 of open cases, (38) 179.
disease resembling in guinea pigs, (39) 686.
effect on—
 chemical composition of the animal body,
 (35) 883.
 opsonins in healthy rabbits, (26) 180.
 organs and tissues of rabbits, (28) 280.
equine—
 description, (26) 282.
 investigations, (29) 385.
 notes, (38) 486.
 symptomatology, (29) 479.
eradication, (27) 77, 382, 475, 482, 576; (31) 380,
 676, 882.
eradication from cattle and swine, (38) 686.
eradication from herds, (29) 500, 886.
experimental epidemiology in, (36) 81.
fallacies in royal commission report, (28) 679.
hemolytic reactions in, (26) 379.
human and bovine—
 differentiation, (26) 281.
 method of infection, (26) 484.
 relation, (26) 886; (27) 381, 480, 784; (29) 479,
 884; (30) 882; (31) 182, 676; (35) 75, 181;
 (37) 80, 181.
human—
 bone and joint, (37) 181.
 bovine, and avian, relation, (31) 581.
 control, (29) 382.
 control in England, (31) 779.
 forms of, (26) 680.
 immunization, (29) 884.
 investigations, (26) 884.
 transmission to bovines, (26) 378.
 types of bacilli in, (35) 576.
immune blood transfusion for, (40) 385.
immunity, review of investigations, (28) 180.
immunity studies, (33) 480.
immunity to, (26) 181.
immunization, (26) 181, 284, 379, 380, 578, 584,
 676, 680, 681; (27) 184, 383, 482, 682; (28) 180,
 585, 680; (29) 79, 481, 584, 782, 886; (30) 582,
 782; (31) 380; (32) 182, 183, 275, 375; (33) 181,
 284, 481, 878; (34) 274; (35) 883; (37) 880.
immunization, review, (26) 85.
immunization, treatise, (36) 182
in a rat, (39) 390.
animals, (30) 581.
asses, (34) 82.
camels, (37) 690; (40) 86.
camels, treatment, (29) 676.
carnivorous animals, (37) 880.
cattle and swine, (39) 390.
children and infants, (32) 878; (40) 584.
children, types of bacilli in, (29) 286.
dogs, (26) 85; (40) 782.
dogs and cats, (35) 75.
East Indian buffaloes, (26) 378.

Tuberculosis—Continued.

- in England, (32) 271.
- equines, (40) 778.
- farm animals, (32) 271; (38) 81.
- food animals, relation to public health, (31) 182.
- goats, (26) 179; (27) 683; (30) 383; (37) 481.
- Great Britain, (34) 382.
- ground squirrels, (26) 484.
- horses, (27) 885; (28) 382; (34) 678; (37) 880.
- Indian cattle, (38) 285.
- insects, (31) 155.
- mesenteric lymph glands of pigs, (32) 181.
- Normandy, (36) 182.
- North Dakota, (38) 180.
- Norway, (35) 181.
- nursing children, (29) 382.
- pheasants, (34) 386; (36) 676.
- pigeons, (31) 881.
- pigs, (27) 684; (29) 79; (36) 779; (37) 82.
- pigs and fowls, relationship, (28) 884.
- pigs, confusion with swine plague, (31) 683.
- pigs, diagnosis, (30) 883.
- pigs, dissemination by fowls, (29) 479.
- pigs, prevention, (26) 181.
- pigs, studies, (26) 884; (33) 384, 678; (35) 79, 785.
- pigs, transmission to man, (36) 579.
- pigs, transmission to offspring, (33) 278.
- pigs, type of bacilli, (27) 287.
- poultry, (26) 486; (28) 382; (31) 79; (39) 791.
- poultry in Ontario, (38) 288.
- rabbits, diagnosis, (27) 579.
- rural communities, (33) 284.
- sheep, (40) 385.
- South American ox tongues, (31) 882.
- the college herd, (29) 885; (34) 187.
- the university herd, (29) 78.
- United States, (37) 274.
- urinary channels, diagnosis, (26) 485.
- infection of man by bovine bacillus, (26) 178.
- infection through expired air, (37) 378.
- international control, (34) 575.
- investigations, (26) 885.
- laryngeal and tracheal, etiology, (29) 178.
- laryngeal, in a cow, (26) 179.
- lectures on, (29) 884.
- localized infection, (38) 380.
- method of infection, (26) 178; (29) 884.
- milk-borne, control, (30) 82.
- modes and periods of infection, (35) 281; (38) 580.
- "Much granules" in, (29) 178.
- new skin test for, (33) 283.
- notes, (26) 378, 881; (27) 286, 475; (29) 499; (31) 380; (37) 378, 477, 879; (40) 778, 880.
- of bones and joints, (38) 285.
- central nervous system of bovines, (26) 887.
- cervical and axillary glands, (37) 378.
- lymphatic glands, (28) 882.
- lymphatic glands in children, (34) 677.
- mammary gland, diagnosis, (32) 376.
- mammary gland in a mare, (31) 683.
- muscles in man and domestic animals, (26) 379.
- retropharyngeal lymph glands, (31) 881.
- seminal vesicles, vas deferens, and urethra in cattle, (35) 882.
- the abomasus of bovines, (27) 286.
- the bladder, notes, (26) 484.
- the brain in bovines, (26) 282; (31) 881.
- tonsils in a heifer, (31) 182.
- udder of bovines in Sweden, (31) 482.
- open, diagnosis, (33) 678; (36) 675.
- open, detection in bovines, (29) 384.
- open liver, in bovines and pigs, (30) 581.
- origin and development, (27) 579.
- papers on, (27) 77.
- prevention, (27) 480.
- primary pudic and vaginal, in bovines, (31) 481.
- problem in relation to meat inspection, (40) 577.
- production in guinea pigs, (35) 281.
- pulmonary—
 - diagnosis, (27) 83, 382; (32) 181; (33) 181; (34) 581; (35) 180.
 - induced by inhalation, (30) 82.
 - infection, (39) 288.
 - prognosis, (32) 879.
- relation to—
 - buffaloes' milk, (36) 573.
 - cockroaches, (26) 347.

Tuberculosis—Continued.

- relation to—continued.
 - diet, (31) 464.
 - fibrosis, (26) 179.
 - Johne's disease, (29) 284.
 - milk supply, (26) 275; (28) 276, 674; (30) 574; (32) 472.
 - review of literature, (29) 582.
 - serum diagnosis, (32) 179; (33) 283.
 - serum, specific action of, (30) 183, 184.
 - serum test, (39) 80.
 - studies, (26) 181; (27) 285, 783; (34) 575.
 - testing purebred herds for, (38) 286.
 - therapy of, (28) 284, 585.
- transmission—
 - by factory-infected candy, (34) 366.
 - by house flies, (26) 61.
 - by milk, (30) 882.
 - from animal to man, (27) 579.
 - from man to bovine, (26) 680.
 - treatment, (26) 284, 578; (27) 378, 384, 480, 682, 888; (28) 679; (30) 184, 284, 683; (31) 583; (32) 182, 375, 880; (33) 677, 877; (37) 275, 880.
 - treatment by transfusion of immune and normal blood, (40) 385.
 - treatment with enzymes, (31) 607.
 - use of protein diet against, (31) 84.
- Tuberculous—
 - antibodies, production in sound animals, (28) 585.
 - antigens and antibodies, inhibition reaction of, (31) 481.
 - antigens, preparation, (26) 783.
 - excretions, examination, (27) 885.
 - foci, old, virulence in bovines, (29) 479.
 - infection, immune reaction to, (37) 275.
 - material, inhalation by cats, (30) 183.
 - sputum, chemical properties, (29) 782.
 - tissue—
 - as antigens in complement fixation reaction, (29) 285.
 - chemical changes in, (40) 584.
 - iodin in, (33) 283; (34) 580.
- Tubers—
 - etherized, enzymatic activities of, (30) 728.
 - formation, (30) 29.
 - hemicellulose in, (30) 130.
 - sampling device for, (37) 711.
 - starchy, analyses, (28) 359.
 - translocation of mineral constituents, (34) 427.
- Tubes, circular, stress analysis of, (29) 593.
- Tufa cement, tests, (28) 589.
- Tule, fertilizing value, (38) 520.
- Tulip—
 - Botrytis disease, (39) 858.
 - bulbs as food, (32) 855.
 - bulbs, culture experiments, (30) 145.
 - diseases, notes, (27) 851.
 - diseases, treatment, (35) 51.
 - poplar, characteristics and value, (37) 147.
 - soft scale, notes, (27) 755.
 - tree, fertilizing value, (29) 215.
 - tree scale, notes, (28) 554; (33) 58, 253.
 - trees, description, (27) 442.
- Tulips—
 - as affected by stimulants, (26) 731.
 - breaking sickness in, (35) 550.
 - certificated by Royal Horticultural Society, (31) 340.
 - classification, (37) 836.
 - culture experiments, (37) 836.
 - fungus disease affecting, (26) 851.
 - manual, (31) 48.
 - studies, (39) 144, 653.
- Tulipwood, description, (27) 442.
- Tulucuna fat, detection, (29) 613.
- Tumalo irrigation project in Oregon, (34) 85.
- Tumbleweed, water requirement, (32) 127.
- Tumbling mustard, eradication, (39) 744.
- Tumidiscapus—
 - new genus, description, (26) 152.
 - oophagus n.sp., description, (33) 661.
- Tumor—
 - growth, control, (39) 666.
 - hereditary, in Drosophila, (40) 860.
 - immunity, notes, (38) 580.
- Tumors—
 - chemistry of, (32) 78.
 - diagnosis, dialysis method, (31) 877.
 - immunization, (33) 477.
 - in domestic fowl, (34) 480.

Tumors—Continued.

- in man and plants, relationship, (34) 249, 845.
- malignant, origin of melanotic pigment in, (27) 468.
- plant and animal, comparison, (29) 548.
- spontaneous, in chickens, (31) 485.
- treatise, (31) 280.
- treatment, (29) 476.

Tung tree, culture in United States, (30) 535.

Tunis grass—

- culture experiments, (38) 630, 831.
- culture in Arizona, (32) 226.
- culture in Hawaii, (32) 729.
- culture in Philippines, (26) 361, 362.
- notes, (29) 233, 428.

Tupelo, distillation value, (32) 48.

Turbidimeter, new, description, (31) 615.

Turds *avnaschkae pallasii*, coccidiosis in, (27) 187.*Turgenia juncoidea* n.sp., description, (33) 545.

Turf—

- as bedding for cattle and horses, (37) 723.
- digestibility, (32) 862.
- for golf courses, treatise, (37) 146.
- meal as filler for feeding stuffs, (30) 672.

Turin—

- properties, (31) 309.
- synthesis, (31) 310.

Turkey—

- fat, constants, (27) 111.
- gnat, notes, (29) 454.
- industry in United States, (37) 573.

Turkeys—

- aberrant intestinal protozoan parasites, (35) 684.
- as egg producers, (27) 774.
- breeding and management, (33) 77.
- care and management, (34) 377; (39) 176.
- eating of alfalfa caterpillar by, (32) 58.
- hatching and rearing artificially, (26) 95.
- management, (40) 177.
- protozoan organisms in rectal and cecal contents, (26) 684.
- raising, (36) 384, 871.
- raising and marketing, (37) 573.
- raising with special reference to blackhead, (35) 284.
- serum proteins of, (32) 861.
- tick infesting, (33) 354.
- treatise, (26) 270; (31) 271.

Turmeric leaf—

- disease, notes, (27) 747; (38) 548.
- spot, notes, (28) 241.

Turnip—

- aphis, notes, (37) 254.
- bacterial soft rot, description, (32) 148.
- cake, analyses, (26) 267, 363.
- clubroot, notes, (32) 48.
- clubroot, treatment, (38) 646.
- finger-and-toe disease—
 - prevention, (35) 522.
 - treatment, (26) 342; (30) 848; (31) 424.
- flavor in butter, (32) 270.
- flavor, removal from milk, (26) 673.
- fllea-beetle—
 - notes, (29) 761.
 - remedies, (32) 851; (33) 158.
 - striped, in Maryland, (38) 154.
- flower beetle, notes, (27) 457.
- gall weevil, notes, (35) 467.
- leaf silage, notes, (27) 669.
- leaf spot, studies, (37) 753.
- louse, investigations, (34) 452.
- moth larvae injurious to tobacco, (31) 60.
- sawfly, notes, (38) 164.
- seed, germination as affected by turpentine and paraffin, (32) 851.
- seed in Denmark, (37) 742.
- seed, vitality, (27) 740.
- shoots, use in salads, (40) 864.
- tops, dried v. ensiled, energy value, (32) 768.
- weed, notes, (34) 532.

Turnips—

- analyses, (27) 334, 469; (32) 465; (36) 65.
- analyses and feeding value, (32) 461; (38) 665.
- and rape, crosses between, (31) 528.
- and swedes, crosses between, root nodules of, (33) 848.
- as affected by boiling and steaming, (28) 363.
- as catch crop after wheat, (37) 136.
- assimilation of nitrogen by, (26) 319.

Turnips—Continued.

- black hearted, (33) 53.
- composition as affected by acid phosphate, (26) 527.
- composition as affected by phosphorus in soils, (29) 417.
- cost of production, (32) 530; (33) 831.
- culture, (28) 42; (31) 35; (32) 337; (33) 238.
- culture—
 - experiments, (26) 329; (27) 33; (28) 531; (29) 138, 427; (32) 36, 132, 431; (33) 632, 830; (34) 34; (36) 32, 435, 436; (37) 733; (38) 132; (39) 124, 125; (40) 625, 735.
 - for stock food, (33) 41.
 - in Dutch East Indies, (30) 697.
 - in South Dakota, (40) 32.
 - on moor soils, (39) 437; (40) 230, 523.
- Cytospora batata attacking, (39) 456.
- digestion coefficients, (39) 171.
- effect on composition of milk, (29) 277.
- effect on following crop, (40) 624.
- electroculture experiments, (40) 429.
- elongation of hypocotyl, (28) 39.
- factors affecting composition, (38) 432.
- fertilizer experiments, (26) 324, 330, 537, 631, 817; (27) 137, 334; (28) 632, 735; (29) 22, 126, 213, 227, 228; (30) 134; (31) 133, 829; (32) 431, 630, 832; (33) 326, 831; (34) 519, 532, 632; (36) 427, 529, 626; (39) 427, 621, 735.
- food value, (36) 863.
- for cattle, (37) 866.
- for cows, (38) 477.
- for sheep, (26) 299.
- growth on volcanic ash, (32) 36.
- heredity in, (31) 43.
- heredity of form and color in, (29) 332.
- insects affecting, (26) 553; (32) 735.
- irrigation experiments, (31) 732.
- liming experiments, (31) 424; (40) 322.
- manurial value of tops, (39) 836.
- mulching experiments, (38) 344.
- mulching v. clean culture, (33) 534.
- radioactive fertilizer for, (31) 129.
- relation between size of seed and yield, (26) 434.
- relative yielding capacity, (40) 625.
- resistance to club root, (33) 52.
- root development with other crops, (26) 129.
- root-lose injury, (40) 60.
- rotation experiments, (29) 227.
- sclerotinia diseases, (40) 49.
- seed production, (33) 226.
- seeding experiments, (29) 224.
- spraying, apparatus for, (39) 762.
- subsoiling experiments, (37) 732.
- sugar as fertilizer for, (27) 722.
- sulphur as fertilizer for, (28) 740; (30) 138.
- susceptibility to swede mildew, (34) 52.
- thinning experiments, (29) 432.
- varieties, (26) 331, 630, 631; (27) 32, 334, 637; (29) 222, 228, 530; (30) 228; (31) 133, 829; (32) 431, 532, 630; (33) 33, 34, 330, 831; (34) 865; (37) 228; (38) 133, 140, 432.
- varieties for moor culture, (39) 438; (40) 230.
- varieties resistant to finger-and-toe disease, (30) 848.
- variety tests, (39) 336; (40) 735.
- water requirement, (32) 127.
- weed control in fields of, (40) 536.
- yield as affected by planting distance, (34) 527.
- yields, (40) 730.
- zebra caterpillar on, (39) 160.

Turpentine—

- adulteration, detection, (26) 611.
- analyses, (30) 616.
- as a vermifuge, (38) 884.
- beetle, red, notes, (26) 561; (32) 552.
- detection in ethyl alcohol, (29) 312.
- effect on turnip seed, (32) 551.
- from *Boswellia serrata*, (40) 248.
- from waste resinous woods, (28) 512.
- industry in—
 - Austria, (32) 48.
 - Tonkin, (31) 839.
 - United States, (30) 744, 791.
- Italian, studies, (38) 713.
- larvicidal value, (34) 359.
- methods of analysis, (27) 210.
- methods of extracting, (26) 513.
- oil, distillation and composition, (29) 719.
- oil, thermal figure of, (31) 414.

Turpentine—Continued.

- operations, timber available for, (33) 543.
- possibilities on Pacific coast, (31) 743.
- spruce, toluol from, (39) 209.
- substitutes, analyses, (28) 493.
- sulphite, recovery, (38) 810.
- testing and analysis, (40) 804.
- tree, strength and elasticity tests, (27) 43.
- wood, investigations, (28) 512.
- wood, production and uses, (26) 413.
- yield from double chipping, (38) 46.

Turtle—

- meat adulteration, detection, (26) 110.
- tuberculin, use against tuberculosis, (30) 284.

Tussilago farfara, hydrocarbons in, (26) 107.

Tussock—

- caterpillars, false, (39) 561.
- grass, analyses, (32) 166.

moth—

- antique or rusty, notes, (32) 651.
- hickory, (39) 761.
- in apple orchards, (26) 541.
- in Nova Scotia, (35) 853; (40) 57.
- notes, (28) 159; (38) 358; (39) 863; (40) 57.

moth, white-marked—

- control, (39) 561, 861.
- in Minnesota, (38) 155.
- notes, (27) 356, 554, 658, 755, 861; (28) 57, 155, 158; (36) 55, 655; (40) 259.

Twenty-eight hour law, (32) 679.

Twig borer—

- notes, (29) 657.
- studies, (31) 852.
- western, notes, (35) 58.

Twig girdler, notes, (28) 159; (37) 660.

Twig pruner, sombre, studies, (28) 757.

Twigs—

- forcing, (38) 39.
- mounting for school work, (31) 394.

Twilight—

- colors at Mt. Weather, Va., (31) 213.
- duration, (35) 115.
- studies, (36) 718.

Twilights, Italian, in 1913, (31) 213.

Twinning in cattle, (40) 873.

Twins, mammalian, biology, (38) 574.

Twitch grass, destruction, (31) 739.

Tychea—

- brevicornis, treatment, (26) 648.
- trivialis, notes, (28) 655.

Tychius—

- gossypii n.sp., description, (33) 159.
- lineellus, notes, (35) 364.
- picirostris, notes, (36) 456.
- 5-punctatus, life history and habits, (36) 860.

Tydeus coccophagus, notes, (27) 861.

Tylenchulus semipenetrans—

- affecting oranges, (34) 354.
- in Florida, (33) 550.
- life history, (31) 450.

Tylenchus—

- acutocaudatus on coffee, (38) 51.
- angustus—

- injurious to rice, (38) 351, 547.
- n.sp., studies, (30) 540.
- notes, (39) 146.
- on rice, (34) 49.
- studies, (40) 48.

devastatrix—

- affecting narcissus, (36) 752; (38) 455, 460.
- notes, (28) 847; (29) 150; (30) 159, 448, 647; (32) 448; (34) 249; (39) 57, 250, 254.
- relation to clover sickness, (36) 348.
- treatment, (29) 151.

dipsaci—

- and T. tritici, notes, (34) 841.
- control in Westphalia, (26) 545.
- in the United States, (31) 746.
- injurious to hyacinth bulbs, (31) 450.
- injurious to phlox, (31) 56.
- notes, (28) 750; (37) 246.

penetrans n.sp., description, (38) 147.

similis affecting bananas, (36) 347.

similis, description, (34) 50.

sp., injurious to rice, (28) 151.

sp., notes, (28) 658; (29) 445.

sp., relation to rice ufra disease, (30) 49.

tritici—

- in Virginia, (38) 850.
- in wheat heads, (37) 840.

Tylenchus—Continued.

tritici—continued.

- notes, (29) 243; (30) 243; (36) 348; (39) 649; (40) 144, 849.

parasitism, (30) 648.

Tyliidae, erection, (37) 846.

Tyloderma foveolatum, notes, (32) 556.

Tyloses in American woods, (30) 844.

Tympauechus americanus, notes, (27) 355.

Tyora sterculiae, notes, (28) 655.

Typha—

- culture and utilization, (40) 443.

fiber from, (39) 510.

- spp., culture and selection experiments, (29) 531.

spp., studies, (29) 522.

Typhilitis, warty, in pheasants, studies, (26) 684.

Typhlocyba—

- comes, see Grape leafhopper.

cymba n.sp., description, (40) 261.

rosae—see also Empoa rosae.

- notes, (28) 157; (36) 857.

spp., studies, (33) 860.

Typhlo-hepatitis, infectious, in turkeys, (26) 384, 588.

Typhlodendron lineatus, studies, (39) 65.

Typhoid—

- and paratyphoid bacilli, detection in water and sewage, (38) 188.

bacilli—

- as affected by lactic organisms in milk, (27) 176.

destruction in sour milk, (40) 476.

- growth-producing substance in cultures, (39) 82.

migration in rabbits, (36) 576.

viability in sour cream, (32) 675.

coli group, specific ferments for, (34) 278.

fever—

- caused by food at public dinner, (34) 69.

control in Virginia, (30) 319.

diagnosis, (31) 878.

diet in, (32) 564.

dissemination, (28) 258.

fever, dissemination—

- by chickens, (32) 477.

clothing, food, etc., (31) 68.

oysters, (35) 162.

vegetables, (26) 661; (27) 766; (28) 258; (38) 166.

fever—

- epidemic at Rock Island, Illinois, (29) 617.

evolution of, (39) 285.

immunization, (26) 567.

immunized milk for, (34) 272.

in horses, investigations, (28) 184; (30) 186.

prevention, (26) 567.

fever, relation to—

- bedbugs, (28) 251.

butter, (38) 265.

house flies, (28) 356.

milk bottles, (28) 879.

milk supply, (26) 478; (27) 376; (28) 674; (38) 377.

oysters, (27) 866; (31) 460.

sewage pollution, (27) 318.

water supply, (30) 319.

fever—

- role of specific fats in complement fixation, (39) 80.

serodiagnosis, (31) 877.

transmission by factory-infected candy, (34) 366.

transmission by house flies, (26) 61; (37) 854.

treatment, (38) 585.

fly, see House fly.

human, relation to hog cholera, (26) 881.

infection of horses, (40) 289.

like diseases of birds, (40) 685.

outbreak due to polluted water cress, (30) 64.

patients, metabolism experiments with, (35) 369.

vaccine, effect on tuberculous guinea pigs, (37) 481.

vaccine, standardization, (39) 82.

Typhula graminum—

- in Bohemia, (35) 650.

notes, (28) 52.

- Typhus**—
 diagnosis, (35) 182.
 exanthematous, transmission by lice, (33) 857.
 fever organism in lice, (37) 851.
 fever, transmission, (26) 759.
 in dogs, (34) 682.
- Typophorus canellus**—
 in Maryland, (38) 155.
 notes, (35) 54.
- Tyrannus**—
 spp., feeding habits, (28) 56.
 verticalis, destruction of locusts by, (28) 351.
- Tyroglyphus**—
 americanus, notes, (26) 863; (28) 457.
 farinae, *see* Flour mite.
 lintneri, notes, (27) 657.
 sp. notes, (27) 556.
 spp. on cheese, (39) 664.
- Tyromyces ellisianus**, notes, (35) 655.
- Tyrosin**—
 and cystin, separation, (31) 807.
 as source of ammonia, (29) 723.
 assimilation by plants, (26) 32.
 content of proteins, (29) 465.
 detection, (28) 805.
 determination, (40) 113, 207.
 determination in proteins, (28) 805; (31) 711, 712, 807.
 effect on action of alcohol on plant cells, (34) 333.
 effect on Stilton cheese, (27) 474, 475.
 in Roquefort cheese, (26) 313.
 ingestion, effect on metabolism, (28) 867.
 necessity in the diet, (36) 265.
 occurrence in—
 milk, (26) 776.
 stachys tubers and citrus leaves, (26) 107.
 sugar beets, (28) 810.
 preparation and determination, (27) 406.
- Tyrosinase**—
 action, studies, (37) 110.
 and deamination, studies, (36) 412.
 composition, (30) 708.
 of beets and potatoes, (35) 414.
 production and action, (28) 503.
- Tyrophix sp.**, in Stilton cheese, (28) 879.
- Udamoselis pigmentaria**, notes, (29) 54.
- Udder**—
 and process of milk production, (39) 679.
 bacteria, (27) 280; (28) 275; (29) 279; (35) 674;
 (38) 76, 478; (39) 383; (40) 184, 185.
 bacteria, effect on quality of milk, (36) 476.
 bacteria in milk, (39) 384.
 disease, unusual cause, (27) 186.
 diseases, notes, (32) 376.
 diseases, treatment, (36) 693.
 elimination of artificial coloring matter by, (30) 474.
 histological appearances, (29) 278.
 infections, (39) 890; (40) 87.
 surgical affections of passages, (26) 380.
 traumatic lesions of, (26) 285.
- Udo**, culture experiments, (37) 742.
- Udo**, notes, (31) 140.
- Ufens niger**, notes, (31) 752.
- Ula spp.**, of North America, (33) 561.
- Ulcers**, treatment, (26) 580.
- Ulla grass**, production, (40) 243.
- Ulmus**—
 campestris, variations in salt content, (29) 28.
 fulva, mucin-like substances of, (31) 409.
- Ultrafilter**, new form, description and uses, (39) 804.
- Ultrafiltration**—
 apparatus, description, (36) 111.
 aseptic, apparatus for, (38) 225.
- Ultramicroscope**, description, (37) 711.
- Ultramicroscopy**—
 of soil extracts, (30) 516.
 treatise, (26) 82.
- Ultraviolet rays**—
 absorption by—
 arable soil, (34) 414.
 chlorophyll, (28) 37.
 plants, (39) 733.
 soils, (34) 817.
 action on fig must, (37) 314.
 antibiotic action, (28) 129.
 coagulation of proteins by, (29) 130, 131; (30) 110.
 decomposition of carbon dioxide by, (30) 431.
- Ultraviolet rays**—Continued.
 effect on—
 amylase, (31) 711.
 cane sugar, (26) 308.
 carbohydrates, (28) 529.
 chlorophyll-containing cells, (33) 28.
 diastase and invertase, (26) 203.
 enzymes, (28) 110.
 fungi, (38) 855.
 lactic acid, (28) 201.
 phosphorescent bacteria, (36) 526.
 plant reproductive organs, (35) 334.
 plants, (26) 430; (27) 827; (29) 130.
 the eye, (34) 113.
 in treatment of wounds, (38) 585.
 lamp, description, (28) 214.
 metabiotic action, (31) 379; (32) 475.
 penetration of leaves by, (31) 129.
 penetration of plant organs by, (33) 427.
 purification of water by, (32) 87; (37) 588.
 saccharification of inulin by, (26) 802.
 sterilization of milk by, (28) 277, 373, 675.
 sterilization of water by, (26) 28; (27) 317; (28) 214, 317, 416, 514; (29) 415; (30) 419, 816.
 Ultuna agricultural institute and farm, (37) 892.
- Ulla lactuca**—
 analyses, (26) 324.
 sources of nitrogen for, (31) 828.
- Umatilla Experiment Farm**—
 report, (30) 441; (40) 494.
 work, (29) 540.
- Umbilical necrobacillosis**, studies, (33) 676.
- Umbrella tree**, host plant of fruit fly, (26) 758.
- Uncinaria canina**, notes, (34) 275.
- Uncinariasis** in dogs, (36) 676.
- Uncinula**—
 acris, symbiosis with maple leaves, (37) 327.
 americana (necator?), occurrence in Poland,
 (26) 845.
 necator, hibernation, (34) 847.
 necator, notes, (36) 347.
 spiralis, treatment, (34) 841.
- Underfeeding**, effect on blood, (26) 360.
- Uniform grades** and standard packages, (40) 293.
- Unilachnus n.g.**, erection, (40) 651.
- United States Department of Agriculture**—
 Agricultural Commission to Europe, (40) 493.
 and experiment stations, relationship, (29) 604.
 annual reports, (27) 196; (37) 297.
- appropriations**—
 1912-13, (27) 301.
 1913-14, (28) 301.
 1914-15, (31) 1.
 1915-16, (32) 401.
 1916-17, (35) 301.
 1917-18, (36) 401.
 1918-19, (39) 301.
- Bureau of Animal Industry**—
 animal nutrition investigations, (27) 469.
 as a war auxiliary, (40) 577.
 report, (27) 196; (29) 793.
- Bureau of Chemistry**, color laboratory, (40) 16.
- Bureau of Plant Industry**—
 activities, (28) 898.
 forest pathology laboratory, (40) 500.
 reclamation project farms, (40) 493, 494.
- Bureau of Soils**—
 activities, (36) 323.
 field operations, (31) 512; (34) 321.
 contributions to chemical journals, (36) 600.
 development and activities, (37) 592.
 farmers' bulletins, index, (35) 299.
- Forest Service**—
 exhibit at San Francisco, (34) 347.
 organization and policy, (35) 451.
 research activities, war-time, (40) 743.
 scope of investigations, (28) 842.
 silviculture plans, (36) 143.
 work, (39) 648.
- functions**, (27) 706.
- history**, (36) 598.
- index to legislation**, (26) 899.
- laws relating to**, (29) 899; (32) 693; (33) 698.
- Library**, accessions, (26) 95, 599, 899; (27) 97, 599, 798; (23) 299, 599, 899; (29) 299, 599.
- Library**, cooperation with other libraries, (34) 494.
- market service**, (30) 197.
- notes**, (28) 495, 699; (30) 96; (36) 798.

United States Department of Agriculture—Contd.

- Office of Experiment Stations—
 - notes, (27) 199.
 - nutrition investigations of, (30) 258.
 - report, (28) 695; (29) 899; (33) 299.
 - review, (33) 2.
 - Office of Farm Management—
 - notes, (40) 500.
 - organization and work, (40) 890.
 - work, (39) 592, 593.
 - Office of Home Economics, work, (38) 662.
 - Office of Markets and Rural Organization,
 - work, (34) 194, 490.
 - opportunities in, (27) 897.
 - organization list, (30) 197; (31) 599; (34) 94; (36) 794; (39) 497.
 - plant disease survey, (37) 500.
 - program of work, (33) 698.
 - publications for—
 - farm women, (30) 197.
 - housekeepers, (30) 560.
 - teachers, (26) 692.
 - relation to agricultural colleges and experiment stations, (32) 194.
 - reorganization, (32) 402.
 - reports, (29) 496; (31) 195; (32) 795; (35) 94; (40) 493.
 - retirement of Secretary Wilson, (28) 307.
 - semicentennial, (27) 701.
 - States Relations Service—
 - establishment, (33) 1.
 - notes, (36) 296; (37) 500; (38) 99; (39) 699.
 - work of interest to women, (38) 898.
 - statutory history, (34) 796.
 - war emergency funds, (37) 301.
 - Weather Bureau. (*See* Weather Bureau.)
 - work in 1915, (32) 496.
 - work in 1917, (36) 396.
 - work of, (40) 688.
 - work of, for housekeepers, (31) 359.
 - yearbook, (27) 599; (29) 496; (31) 396; (33) 299; (35) 195; (37) 599; (39) 499.
 - yearbooks, index, (29) 599.
- United States—
- Department of Commerce, Commissioner of Fisheries, report, (35) 366.
 - Food Administration—
 - notes, (39) 98.
 - policies and plans, (38) 792.
 - Geological Survey—
 - gaging stations, (27) 116; (33) 89.
 - publications on water resources, (27) 116.
 - Reclamation Service, report, (31) 383; (33) 485; (35) 284; (37) 84.
 - Livestock Sanitary Association, report, (27) 77; (34) 184, 185, 273; (36) 675; (38) 178.
 - Universities, American system, (27) 896.
- University—
- graduates, professional distribution, (28) 192.
 - Home and School League of University of Texas, (31) 598.
 - of Manchester, notes, (30) 199.
 - of the Philippines, notes, (28) 399.
 - Univoltin silk moth, development of eggs, (27) 456.
- Uranium—
- acetate, effect on olives, (26) 825.
 - effect on—
 - plant cells, (27) 826.
 - plants, (32) 325.
 - sugar beets, (34) 38.
 - nitrate, effect on—
 - growth of *Aspergillus niger*, (29) 422.
 - plant growth, (35) 434.
 - oxid, effect on germination of seeds, (29) 528.
 - oxid, fertilizing value, (29) 731.
 - salts, effect on plants, (28) 38, 731.
 - salts, fertilizing value, (30) 627.
 - sulphate—
 - effect on sugar beets, (31) 233.
 - fertilizing value, (27) 628.
 - toxic effect on plants, (38) 628.
- Uranyl sulphate, effect on germination of seeds, (29) 828.
- Urban—
- growth in United States, (34) 193.
 - population in—
 - Germany, standard of living, (26) 358.
 - United States, (27) 489; (30) 893; (36) 591.
- Urd, description, (31) 740

Urea—

- adding to diet, (34) 762.
 - as feed for pigs, (31) 265.
 - assimilation by—
 - plants, (26) 32.
 - Streptothrix, (27) 621.
 - yeasts and fungi, (28) 824.
 - concentration in the tissues, (40) 562.
 - decomposition by mold fungi, (29) 28.
 - determination, (30) 764; (35) 112; (38) 110.
 - determination in—
 - blood, (40) 207.
 - urine, (26) 870; (33) 116; (40) 202.
 - urine and blood, (36) 317.
 - distribution in and elimination from the body, (32) 165.
 - effect on—
 - carbon dioxid production in soils, (30) 123.
 - hemolytic reaction, (36) 878.
 - inversion of sucrose, (28) 613.
 - nitrogen retention in goats, (32) 261.
 - excretion, rate of, (36) 163.
 - feeding to dogs and pigs, (30) 170.
 - fertilizing value, (28) 736; (30) 326; (31) 518, 821; (33) 25; (34) 518; (35) 325, 427, 518; (37) 216.
 - formation, (28) 664.
 - formation from cyanamid, (32) 125.
 - formation in the animal body, (40) 866.
 - from lime-nitrogen, fertilizing value, (34) 25.
 - in normal human blood, (28) 665.
 - nitrate, fertilizing value, (31) 822; (34) 25, 518; (35) 325; (36) 134.
 - nitrification in soils, (26) 722.
 - origin and distribution in nature, (38) 110.
 - solutions, effect on metabolism, (28) 866.
 - synthesis, (38) 110.
 - utilization by soil fungi, (39) 623.
- Urease—
- action of, (32) 804.
 - in castor beans, (30) 409.
 - jack beans, (35) 612.
 - legume nodules and other plant parts, (35) 334.
 - plants, (27) 633; (35) 313; (37) 204.
 - soy beans, (32) 803; (35) 10, 109, 110.
 - preparation, (33) 116.
- Uredinales—
- from New Mexico, (39) 147.
 - monograph, (26) 243; (32) 49.
 - of Guatemala, (40) 327.
 - of Porto Rico, (37) 749.
 - of the Andes, (40) 133.
 - on Onagraceae, (37) 552.
 - relation to Hymenomycetes, (28) 244.
- Uredineae—
- cultures of, (32) 145; (39) 147.
 - dispersal of spores by, (28) 645.
 - germination of teleutospores, (28) 241; (34) 744.
 - infection experiments with, (26) 845.
 - inoculation experiments, (32) 750; (35) 650.
 - location of spore masses, (36) 825.
 - monograph, (36) 647.
 - new species, (40) 327.
 - of Colombia, (35) 245.
 - of North America, (31) 145.
 - on Carex in North America, (29) 750.
 - sexuality in, (34) 526.
- Uredinia, internal, notes, (35) 635.
- Uredinopsis—
- copelandi, aecial stage, (35) 553.
 - mirabilis, infection experiments, (30) 745.
 - spp., hosts of, (29) 645.
 - spp., life histories, (30) 47.
- Uredo—
- arachidis—
 - notes, (37) 452, 551; (40) 155.
 - treatment, (32) 612; (34) 746; (39) 548.
 - chamaecyparidis nutkaensis n. var., studies, (31) 246.
 - concors, notes, (40) 17.
 - ericae n. sp., notes, (29) 49.
 - fici, notes, (37) 453.
 - gossypii, notes, (29) 548; (33) 741.
 - manihotis, injurious to *Manihot glaziovii*, (27) 753.
 - (*Melampsora*) spp., notes, (27) 252.
 - mülleri, biology and morphology, (27) 648.
 - mülleri, notes and treatment, (29) 50.
 - nootkatensis and *Aecidium sorbi*, identity, (35) 844.

Uredo—Continued.

- orchidis, notes, (34) 442.
- ricini, notes, (39) 53.
- scabies, description, (27) 450.
- sp., treatment, (35) 44; (37) 550.
- spp., notes, (28) 645.
- spp., overwintering, (33) 647.
- vitis, notes, (36) 541.
- Uremia of acarian origin in horses, (40) 89.
- Urena lobata fiber, tests, (31) 526.
- Uric acid—
 - as affected by foods, (27) 464.
 - assimilation by plants, (26) 32.
 - assimilation by Streptothrix, (27) 621.
 - decomposition by mold fungi, (29) 28.
 - detection, (28) 805.
 - determination, (37) 470; (40) 207.
 - determination in—
 - blood, (34) 412; (40) 16.
 - milk, (40) 509.
 - urine, (32) 716; (34) 412; (40) 413.
 - diathesis, treatment, (26) 765.
 - effect on hemolytic reaction, (36) 878.
 - excretion—
 - as affected by diet, (30) 864.
 - as affected by light and dark meat, (29) 663.
 - constancy in individuals, (31) 761.
 - on meat-free diet, (33) 663.
 - formation from a purin base, (32) 256.
 - formation, relation to protein intake, (33) 462.
 - in normal human blood, (28) 665.
 - metabolism, studies, (40) 175.
 - nitrification rate, (32) 124.
 - production in chick embryo, (26) 877.
 - puncture, notes, (30) 261.
 - solvent power of normal urine, (33) 664.
 - synthesis in human body, (34) 763.
- Uric nitrate, fertilizing value, (28) 736.
- Uricolysis, notes, (32) 257.
- Uriella, notes, (36) 556.
- Urinary—
 - carbon, determination, (40) 206.
 - constituents, relation to diet, (36) 162.
 - creatin, exogenous origin, (40) 365.
- Urine—see also Manure, liquid.
 - ammonia and gastric secretion, (40) 766.
 - ammonia nesslerization in, (39) 111.
 - aromatic constituents, (36) 313.
 - as affected by light and dark meat, (28) 261.
 - bloody, in cattle, (38) 486.
 - calcium and magnesium content, (36) 366.
 - calorific values, (26) 360.
 - carbon dioxide content, (39) 670.
 - chemistry of, treatise, (26) 809.
 - chlorin content, as affected by thymol-chloroform, (40) 614.
 - composition—
 - as affected by feed, (36) 672.
 - as affected by foods, (31) 761.
 - during fasting, (32) 460.
 - conservation of phosphates in, (29) 317.
 - conservation of phosphorus in, (27) 500.
 - detection of substances in, (29) 408.
 - determination of hippuric acid in, (40) 611.
 - determination of sugar in, (40) 413.
 - energy factors of, (26) 161.
 - examination, (26) 161; (32) 578; (39) 715.
 - excretion in sheep as affected by feeding stuffs, (28) 874.
 - fertilizing material from, (40) 320.
 - food accessories in, (40) 271.
 - hydrogen-ion concentration, (36) 365.
 - notes of analysis, (30) 466; (33) 116, 207.
 - nitrogen content after feeding, (35) 863.
 - of dairy cows, analyses, (36) 672.
 - domestic animals, iron content, (27) 870.
 - male bovines, apparatus for collection, (29) 408.
 - man and animals, treatise, (26) 160.
 - output, relation to epithelial changes, (27) 79.
 - phosphorus content, determination, (39) 806.
 - proteins, studies, (36) 508.
 - sugar content, (39) 112, 874.
 - trimethylamin in, (32) 764.
 - volume of on constant diet, (36) 163.
- Urios, new genus, description, (26) 152.
- Urobacillus pasteurii in soy beans, (35) 110.
- Urochrome and lactochrome, identity, (32) 19.

Urocystis—

- agropyri on Bromus erectus, (40) 156.
- bormmülleri n.sp., description, (28) 546.
- cepulae, description and treatment, (27) 445; (29) 245.
- gladioli, notes, (26) 446.
- occulta—
 - description and treatment, (38) 543.
 - notes, (28) 443, 846; (30) 448, 649; (33) 851.
 - studies, (36) 146.
 - treatment, (32) 843; (39) 354.
- spp., life history and cytology, (26) 341.
- tritici, notes, (34) 845; (38) 48.
- tritici, treatment, (29) 845; (31) 746; (34) 644.
- violae, prevention, (34) 750.
- Urodynamis taitensis pheletes n.subsp., description, (40) 55.
- Uromyces—
 - acuminatus, notes, (26) 340.
 - alhaginis n.sp., notes, (34) 842.
 - andropogonis, inoculation experiments, (28) 551.
 - appendiculatus—
 - control, (40) 845.
 - notes, (31) 746; (39) 249, 852.
 - treatment, (37) 248.
 - betae, description and treatment, (28) 847.
 - betae, notes, (28) 129; (30) 47; (32) 544, 750; (35) 245; (37) 249.
 - caryophyllinus—
 - internal uredinia of, (35) 635.
 - notes, (27) 351.
 - specialization of, (33) 545.
 - studies, (28) 149.
 - fabae, treatment, (32) 545.
 - fallens, life history, (37) 752.
 - fallens on red clover, (39) 550.
 - hyalosporus n.sp., description, (28) 851.
 - junci, new aecial hosts, (36) 245.
 - location of spore masses, (36) 825.
 - monograph, (26) 243.
 - n.spp., descriptions, (28) 51.
 - pisi, studies, (26) 650; (31) 347.
 - relation to Puccinia, (26) 645.
 - scillarum, notes, (33) 741.
 - short-cycled, of North America, (37) 749.
 - spp., notes, (28) 443; (37) 453.
 - spp. on Fritillaria, (38) 548.
 - spp. on Geranium and Polygonum, (36) 547.
 - striatus, notes, (27) 445; (28) 52; (33) 846.
 - trifolii, description and treatment, (39) 754.
 - trifolii, spore germination, (38) 225.
- Urophlyctis—
 - alfalfae, notes, (28) 52; (30) 348; (33) 742; (34) 241; (35) 245; (36) 747.
 - alfalfae, studies, (28) 150; (36) 543.
 - lathyr n.sp., description, (28) 241.
- Urophora solstitialis, life history and bionomics, (32) 759.
- Uropyxis quitensis n.sp. from the Andes, (40) 133.
- Urosigalphus, revision, (32) 557.
- Urothripidae, notes, (27) 656.
- Urotropin, use against bloat in cattle, (33) 389.
- Urtica—
 - dioica, carotinoid content, (31) 803.
 - urens, analyses, (33) 466.
- Urticaria bullosa, relation to swine plague, (28) 682.
- Uscana semifumipennis, notes, (29) 253.
- Uscanopsis carlylei n.g. and n.sp., description, (36) 259.
- Uspulun, fungicidal value, (34) 51; (35) 47.
- Ustilaginolideae—
 - penniseti n.sp., description, (27) 848.
 - virens, notes, (29) 445; (37) 247.
 - virens, studies, (30) 540, 845.
- Ustilaginoidella musaeperda, studies, (27) 50.
- Ustilaginous spores, determination—
 - in flour, bran, and cereals, (26) 408; (36) 146.
 - in wheat bran, (27) 310.
- Ustilago—
 - antherarum—
 - infection studies, (29) 552.
 - investigations, (26) 552.
 - spore formation in, (28) 745.
 - arrhenatheri n.sp., description, (35) 349.
 - avenae and U. levis, inoculation experiments, (37) 750.
 - bromivora, treatment, (30) 241.
 - carbo, effect on horses, (27) 882.

Ustilago—Continued.

- cruenta, occurrence in America, (27) 545.
- ewarti n.sp., description, (26) 846.
- hordei—
 - longevity in infected seed, (30) 241.
 - notes, (30) 448.
 - nuda, biology of, (31) 50.
 - treatment, (27) 445; (40) 156.
 - vars., notes, (33) 146.
- jensenii, mycelium formation in, (31) 242.
- jensenii, notes, (33) 851.
- levis, prevention, (33) 245.
- maydis—
 - control in Queensland, (33) 51.
 - effect on corn, (26) 447.
 - introduction into New South Wales, (26) 53.
 - on corn in Barbados, (33) 445.
 - nuda in Dutch East Indies, (38) 448.
 - nuda, infection experiments, (30) 240.
 - panici-gracilis, description, (30) 351.
 - panici-miliacei, notes, (32) 544.
 - reiliana, inoculation on Guinea corn, (34) 644.
 - sacchari, notes, (26) 848; (34) 50; (37) 551; (38) 550; (40) 157.
 - shiraiana in United States, (36) 653.
 - sorghii, notes, (32) 240.
 - spp., behavior of cells and nuclei during development, (29) 46.
 - spp., description and treatment, (38) 548.
 - spp. in Argentina, (38) 148.
 - spp., life history and cytology, (26) 341.
 - spp., nature and treatment, (32) 145.
 - spp., notes, (28) 443; (30) 747.
 - spp. on oats, (38) 646.
 - spp., spore germinations of, (31) 642.
 - spp., studies, (39) 353.
 - spp., treatment, (26) 546; (31) 841; (33) 145; (36) 247.
 - striaeformis, studies, (36) 247, 543.
 - tragopogonis, notes, (37) 550.
 - trebouxi n.sp., description, (28) 51.
 - tritici—
 - distribution of fruiting bodies, (33) 647.
 - life history, (37) 839.
 - notes, (34) 845; (38) 48, 448.
 - treatment, (27) 746; (28) 746.
 - vaillantii—
 - life history, (31) 246.
 - notes, (33) 742.
 - zeae—
 - dissemination by tree crickets, (35) 548.
 - life history, (33) 345.
 - notes, (37) 452, 750.
 - studies, (38) 249.

Ustilina—
on Hevea, (39) 152.

zonata—
notes, (30) 849; (31) 55; (35) 551; (38) 52, 354; (39) 452; (40) 53.

on rubber, (34) 57.

studies, (37) 52.

Uta, insect vector of, (35) 464.

Utah—
College, notes, (26) 495; (27) 99, 399, 494; (28) 798; (29) 99; (32) 498; (33) 199; (34) 497, 695; (35) 400, 699; (36) 100, 197, 696; (37) 99, 300; (39) 97, 198, 400, 699; (40) 200, 799.

Station, notes, (27) 99, 494; (28) 798; (29) 900; (31) 300; (32) 498; (33) 199; (34) 695; (35) 400, 699; (36) 100, 696; (37) 99, 198, 300, 600, 797; (38) 98, 499; (39) 97, 400, 699; (40) 200, 499, 698, 799.

Station, publications, list, (40) 599.

Station, work of, (40) 599.

University, school gardening in, (26) 193.

Utele, description, (30) 39.

Ustensils, choice and care of, (28) 694.

Uterine—
cornua of mammals, morphology and function of epithelium, (28) 875.

diseases in cattle, (36) 279.

Utetes anastrephae n.sp., notes, (29) 652.

Uveal pigment, immunologic properties, (39) 583.

V moth, notes, (30) 53.

Vaccination—
accidents in, (26) 384.

of hogs, after-effects, (39) 392.

serum-therapy, and immunity, treatise, (27) 76.

technical errors in, (31) 178.

with paratyphoid bacilli, (40) 289.

Vaccine—

- and serum therapy, notes, (29) 377.
 - antirabic, preparation, (26) 782.
 - antityphoid, standardization, (39) 82.
 - hog cholera and swine plague, preparation, (27) 482.
 - hog cholera, notes, (27) 786.
 - organisms, culture media for, (40) 677.
 - sensitized and nonsensitized, studies, (35) 782; (37) 780.
 - therapy—
 - bacterial, studies, (30) 779.
 - in veterinary practice, (33) 82.
 - modified, notes, (26) 83.
 - treatise, (31) 875.
 - treatment, studies, (35) 486.
 - virus, purification by brilliant green, (39) 80.
- Vaccines—
autogenous, use, (31) 378.
- bacterial—
nature and use, (26) 580.
- standardization, (30) 780.
- studies, (40) 286.
- use and abuse, (33) 477.
- combined, investigations, (33) 477.
- for anthrax, preparation, (28) 376.
- guaranties of preparation and distribution, (39) 680.
- in treatment and diagnosis, (36) 575.
- inspection in Oregon, (32) 778.
- investigations, (35) 73.
- manufacture, (26) 372.
- preparation, (33) 280, 386; (38) 283.
- preservatives in, toxicity, (38) 283.
- standardization, (28) 280; (33) 82, 280; (36) 676.
- Vaccinia—
complement fixation in, (34) 877.
- in horses, (38) 586.
- Vaccinium—
corymbosum, fruit of, (36) 502.
- oxycoccus, desiccation, (32) 117.
- vitis-idaea, notes, (33) 143.
- Vachellia farnesiana, notes, (29) 441.
- Vacuna dryophila, notes, (37) 562.
- Vacuum—
cleaners, dissemination of bacteria by, (30) 390.
- cleaning, notes, (29) 593.
- cleaning systems, treatise, (32) 89.
- desiccator, electrically heated, (36) 504.
- evaporators, heat transmission and entrainment in, (28) 893.
- juice heaters, studies, (36) 387.
- oven pump, regulating device for, (35) 313.
- Vaginal catarrh—
contagious, in bovines, immunization, (28) 380.
- infectious, in cattle, (31) 285.
- infectious, notes, (28) 373.
- treatment, (30) 279.
- Vaginitis—
contagious, in cows, treatment, (27) 287, 288.
- granular, in cattle, (39) 391.
- granular, relation to abortion, (28) 781.
- infectious, in cattle, studies, (28) 586.
- Vahlkamfia—
calkensi, life history, (34) 858.
- soli n.sp., description, (31) 420.
- Valerianic acid, rôle in digestion, (36) 763.
- Vallisneria spiralis, growing for wild ducks, (29) 373.
- Valsa—
japonica n.sp., studies, (37) 251.
- leucostoma, inoculation experiments, (36) 149.
- leucostoma, notes, (26) 144; (30) 537; (35) 351.
- paulowniae n.sp., description, (37) 557; (38) 648.
- prunastri, notes, (35) 456.
- sp., notes, (34) 247.
- spp. on apples, (36) 846.
- spp., relation to apple sour sap, (38) 452.
- vitis, notes, (28) 749.
- Valsaria subtropica, notes, (37) 553.
- Vampyrus spectrum nelsoni n.subsp., description, (37) 757.
- Vanadium—
effect on—
 - determination of soil phosphorus, (36) 413.
 - plant growth, (32) 628.
 - in plants, (38) 409.
 - in soils, (31) 720.
 - salts, effect on plant growth, (28) 38.
 - toxic effect on plants, (38) 628.

Vanuza arquata, life history, (34) 754.

- Vanessa—
 antiopa, notes, (28) 752.
 californica, notes, (29) 356.
 cardui, notes, (32) 651.
- Vanilla—
 as affected by foreign pollen, (40) 840.
 as binder for ice cream, (36) 78.
 bacterial disease, description, (26) 649.
 beans as affected by curing, (36) 416.
 Conchaspis angroeci on, (40) 56.
 culture, (27) 844.
 culture experiments, (31) 637; (33) 536; (36) 343;
 (38) 749.
 culture in Madagascar, (32) 142.
 detection of coumarin in, (39) 505.
 diseases, descriptions, (27) 450.
 diseases, notes, (40) 47.
 diseases, treatment, (36) 347.
 extract—
 adulteration, detection, (26) 111.
 analyses, (35) 663.
 composition, (26) 99.
 examination, (28) 166.
 factors affecting quality, (35) 764.
 from Tahiti and Fiji beans, (27) 499.
 methods of analysis, (29) 798.
 fertilizer experiments, (38) 144.
 industry in Tahiti and Moorea, (36) 445.
 powder, effect on bacterial content of ice cream,
 (32) 660.
 production in French colonies, (31) 639.
 production, studies, (40) 43.
 types in Tahiti, (35) 129.
 value in the diet, (29) 664.
 varieties, (29) 642.
- Vanillin—
 determination, (28) 313.
 determination in flavoring extracts, (28) 807.
 determination in vanilla, (36) 507; (40) 15.
 disappearance in soil, (36) 432, 725; (38) 129.
 effect on—
 action of fertilizers, (26) 224; (27) 520.
 citrus fruits, (37) 656.
 growth of cowpeas, (36) 731.
 nitrification in soil, (38) 119.
 plant growth, (32) 619; (34) 126; (35) 21, 424;
 (36) 212, 424.
 wheat, (28) 140; (34) 325.
 in soils, (30) 610; (40) 22, 24.
 in soils, origin, (32) 320.
 methods of analysis, (33) 413; (37) 12.
- Vapor—
 pressures over United States, (37) 314.
 tension in western and equatorial Africa, (34)
 320.
- Vaporite as spray for subterranean insects, (26) 256.
- Vapors, injury to vegetation, (32) 826.
- Variability and amphimixis in *Spirogyra inflata*,
 (34) 370.
- Variation—
 and selection in plants, (33) 822.
 and sexual dimorphism in Ginkgo, (39) 123.
 bibliography, (26) 470; (27) 175; (33) 168.
 in carrots and beets, (39) 734.
 Cichorium intybus, (40) 225, 427.
 copper-treated corn, (39) 526.
 corn, (39) 837.
 Cucurbita and Datura, (39) 747.
 Micromycetes, (39) 124.
 Oenothera, (39) 123, 825.
 Pavonia procumbens, (39) 231.
 Phaseolus vulgaris, (39) 330.
 Plantago lanceolata, (39) 330.
 plants, (29) 321; (34) 635.
 plants—
 cell measurement as aid in analysis, (39)
 527.
 in response to screening, (39) 825.
 studies, (30) 328.
 treatise, (26) 227.
 potato blossom, (39) 535.
 Spiraea inflorescence, (39) 30.
 wheat, (39) 743.
 intra-individual, definition, (26) 162.
 Mendelian interpretation of, (33) 822.
 metaphanic, in Dactylis, (39) 531.
 non-Mendelian, in plants, (37) 725.
 of fertility in mammals, (40) 662.
 of glume length in wheat, (40) 525.
 review of literature, (27) 368.
- Variation—Continued.
 somatic, in pears, (32) 637.
 treatise, (26) 472; (28) 876.
- Varicella, complement fixation in, (34) 877.
- Varichaeta aldrichi, notes, (27) 261.
- Variegation in Capsicum, (39) 123.
- Varietal nomenclature of field crops, (39) 833.
- Variety tests—
 correcting for soil differences, (34) 829.
 error in, (28) 221; (39) 830.
 factors affecting results, (32) 216.
 methods, (30) 33, 134; (31) 226; (36) 527.
 papers on, (37) 240.
 rod-row, technique, (38) 429.
 technique, (40) 227.
 value, (29) 329.
- Variola—
 and vaccine, paper on, (32) 271.
 bovine, in chickens, (27) 685.
 complement fixation in, (34) 877.
 equine, studies, (38) 586.
 of sheep and goats, investigations, (26) 678.
- Varnish—
 methods of analysis, (29) 811; (31) 509, 806; (33)
 17; (39) 613.
 notes, (31) 658.
- Vasculomyces xanthosomae n.sp., description, (29)
 345.
- Vaseline oil, effect on balsam plants, (28) 825.
- Veal—
 bob, detection and use, (28) 65.
 bob, digestibility, (35) 762.
 calves, raising in California, (39) 76.
 immature, as human food, (34) 557.
 profitable production, (28) 374.
 rejection as human food, (32) 662.
- Vegetable—
 acids, toxicity, (28) 443.
 adulterant, new, (26) 868.
 baskets and containers, standards for, (35) 598.
 canning industry in New Jersey, (32) 65.
 chromogens, oxidation and reduction in, (34) 32.
 compounds, humification, (34) 516.
 conserves, methods of analysis, (32) 109.
 diet, effects, (27) 271; (33) 867.
 diseases—
 and pests, (37) 832; (38) 241.
 and pests in Baden, (31) 539.
 control, (39) 140, 649; (40) 747.
 in Porto Rico, (39) 52.
 in relation to transportation, (39) 849.
 in Württemberg, (29) 845.
 investigations, (26) 142.
 notes, (27) 344, 438, 848; (30) 47, 147, 148, 240,
 746; (31) 438, 747; (35) 148; (36) 746.
 overwintering and control, (40) 245.
 studies, (39) 454.
 treatment, (27) 438, 845.
 dyestuffs in Madras, (36) 319.
 fats, see Fat.
 ferments, proteolytic, in latexes, (31) 409.
 ferments, saccharification of starch by, (28) 609.
 food as affected by meat extracts, (27) 365.
 food products, investigations, (34) 256.
 foods—
 cooked, analyses, (29) 659.
 course in use and preparation, (26) 597.
 digestibility, (28) 462.
 of German Africa, (29) 59.
 preparation and use, (34) 899.
 tropical, notes, (31) 855.
 garden, advantages of, (26) 391.
 gardening, (39) 39, 139, 240, 344, 444, 498, 542, 645,
 748.
 gardening—
 in city and suburban districts, (39) 139, 498.
 South Carolina, (40) 245.
 the city, (40) 833.
 the college curriculum, (28) 639.
 the North, (39) 139.
 the South, (39) 139.
 textbook, (39) 899.
 treatise, (26) 538; (40) 340, 536.
 growers in North Carolina, list, (31) 894.
 growing, bibliography, (29) 436.
 industry in—
 Germany, (31) 635.
 New Jersey, (36) 689.
 South Australia, (29) 837.
 inspection service, Federal, (40) 344.

Vegetable—Continued.

- ivory meal, composition and digestibility, (36) 367.
- ivory meal, digestibility, (39) 171.
- ivory, notes, (30) 46.
- marrow fly, notes, (36) 654.
- marrow, inheritance in, (36) 729.
- marrow mildew, notes, (36) 541.
- materials containing tannin, methods of analysis, (35) 316.
- matter, showers of, (37) 808.
- meat extract, analyses, (27) 767.
- oils, *see* Oils, vegetable.
- parasites, treatise, (32) 777.
- pear, notes, (29) 461.
- physiology, progress in 1911, (27) 616.
- physiology, use of respiration calorimeter in, (27) 67, 466, 568; (28) 362.
- powders, adulteration, detection, (30) 415.
- product plants, establishing, (39) 894.
- production, stimulation during the war, (40) 833.
- products—
 - marketing, (29) 492.
 - microscopical examination, (30) 709.
 - purin content, (40) 205.
- proteins, *see* Proteins.
- rots, notes, (40) 844.
- saps, physico-chemical properties, (31) 427; (34) 30.
- seed industry in United States, (36) 535.
- seedlings, damping-off, (39) 454.
- seeds—
 - analyses, (26) 739.
 - breeding work, (40) 833.
 - germination as affected by electricity, (26) 136.
 - home production, (39) 444.
 - longevity in storage, (37) 742.
 - longevity tests, (40) 339.
- seeds, production—
 - at Vineland, Ontario, (37) 343.
 - in Canada, (34) 635.
 - in Sweden, (39) 644.
 - in Switzerland, (40) 833.
- seeds, saving, (38) 241.
- soups, condensed, examination, (31) 659.
- storage rots, notes, (32) 547.
- tanning materials, methods of analysis, (30) 813; (31) 806.
- tannin, qualitative reactions, (26) 808.
- tissue—
 - distribution of fluorin in, (28) 506.
 - mobility of potassium in, (32) 128.
 - oxidation and reduction in, (32) 129; (38) 223.
- wastes, analyses, (38) 626.

Vegetables—

- acclimatization, (34) 231.
- acclimatization in Singapore, (39) 542.
- aluminum content, (32) 455.
- animals affecting, (27) 438.
- antiscorbutic property, (27) 567; (40) 172, 762.
- arsenic in, (27) 269.
- as affected by boron, (39) 429.
- as affected by electric light, (39) 230.
- as source of calcium in diet, (39) 876.
- ash analyses, (29) 861.
- bacterial diseases of in Ontario, (37) 149.
- blanching, (29) 867; (33) 66.
- breeding experiments, (27) 343; (29) 235; (32) 437, 539; (33) 735; (35) 444; (36) 39; (37) 832; (38) 641; (39) 644.
- breeding investigations, review, (35) 341.
- canned—
 - analyses and water content, (40) 864.
 - and preserved, industry in United States, (31) 67.
 - ash content, (33) 260.
 - culture volumeter for organisms from, (39) 714.
 - inspection, (27) 565.
 - market standards, (39) 717.
 - poisoning from, (37) 669, 670.
 - production and distribution, (40) 461.
 - swelling of tins, (40) 764.
 - tin content, (28) 564; (33) 661.
- canning, (26) 762; (32) 253, 509; (33) 18, 697, 805; (34) 714; (35) 14, 558, 717; (36) 97, 509; (38) 12, 94, 114, 208, 715, 867; (39) 165, 208, 317, 418, 614.

Vegetables—Continued.

- canning—
 - and cooking tests, (26) 762.
 - and preserving, (28) 209, 660, 694; (33) 318.
 - and storing, (32) 688.
 - treatise, (36) 717.
- car-lot shipments in 1916, (39) 748.
- carotin in, (39) 713.
- certificated by Royal Horticultural Society, (31) 340.
- changes in during storage, (38) 442.
- cold storage, (30) 640.
- confectionery from, (29) 60.
- conservation, (36) 113, 615.
- conserved, artificial coloration, (27) 809.
- containers and loading rules, (39) 843.
- cooked, antiscorbutic property, (40) 172.
- cooking, (28) 693; (31) 855; (39) 195, 871.
- cooperative experiments, (27) 430.
- coppered, effect on nutrition and health, (29) 762; (30) 761.
- cost of production, (33) 694.
- critical period of growing season, (39) 811.
- culture, (26) 539; (27) 438, 742; (29) 840; (31) 44, 438, 439, 635; (32) 140, 688, 741, 834; (33) 438, 695; (34) 833; (35) 36, 234, 341, 445, 741; (37) 342, 645.
- culture—
 - and conservation, (36) 743, 744.
 - and preservation, (38) 842.
 - during hot weather, (39) 542.
 - experiments, (26) 237, 740; (27) 343, 438, 842; (28) 142, 436, 827; (29) 137, 235, 331, 338, 426, 639; (30) 441, 442; (31) 732; (32) 337, 437, 533, 539; (33) 43, 236, 238, 338, 735, (34) 231, 436, 635; (35) 341, 444; (36) 39; 137, 443; (37) 241, 832; (38) 40, 641; (39) 139, 344, 444, 644; (40) 444, 730, 741.
 - for seed, (36) 137.
 - in Alabama, (26) 740; (35) 141.
 - Alaska, (29) 743.
 - Arizona, (32) 232.
 - British Columbia, (34) 436.
 - California, (26) 47.
 - Canada, (27) 537.
 - Dutch East Indies, (30) 697.
 - French Sudan, (30) 532.
 - Georgia, (34) 436.
 - India, (27) 537.
 - Malaya, (38) 41.
 - Netherlands, (28) 435.
 - New Mexico, (40) 18.
 - New York, (34) 40.
 - North Carolina, (28) 340.
 - North Dakota, (38) 843.
 - peat soils, (38) 539.
 - Philippines, (34) 635.
 - Queensland, (38) 540.
 - sand hills of Nebraska, (35) 835.
 - South Australia, (34) 341.
 - south Mississippi, (30) 639.
 - the South, (32) 743.
 - Utah, (33) 638.
 - western Nebraska, (32) 234.
- on muck lands, treatise, (36) 236.
- study outlines in, (31) 792.
- textbook, (33) 398.
- treatise, (38) 343.
- under glass, (28) 838.
- under irrigation, (28) 839.
- cutworms affecting in Louisiana, (40) 58.
- deterioration in Porto Rico, (36) 340.
- dietetic value, (26) 260.
- digestion of, (26) 662.
- dried—
 - analyses, (40) 864.
 - antiscorbutic value, (39) 771; (40) 762.
 - cooking, (37) 509; (38) 12; (40) 360.
 - manufacture, (32) 117.
 - microbiology, (34) 460.
 - nature and use, (32) 253, 562.
 - nitrogen and calcium content, (39) use, (40) 67.
- drying, (33) 318; (36) 319; (37) 509, 715; (38) 114, 507, 716; (39) 208, 366, 418, 510, 541, 615, 717; (40) 414, 808, 864.
- drying—
 - and serving in the home, (40) 17.
 - apparatus for, (37) 806.
 - in the home, (38) 12.
 - utilization of breweries for, (40) 615.

Vegetables—Continued.

- early, production, (39) 843.
- effect on composition of urine, (31) 761.
- electroculture experiments, (33) 827.
- evaporated, examination, (30) 664; (36) 466.
- evaporation, (37) 715.
- evaporation in the home, (39) 510.
- exhibiting, (29) 745, 898.
- exports from Barbados, (28) 828.
- fertilizer—
 - experiments, (27) 628, 842; (28) 235, 236; (29) 235; (31) 31, 421; (34) 532; (35) 341; (37) 320, 645; (38) 344; (40) 339.
 - experiments, planning, (39) 542.
 - requirements, (26) 818.
- fertilizers and green manure crops for, (34) 836.
- fertilizers for, (34) 40, 436.
- finely divided, nutritive value, (30) 761.
- forcing, treatise, (38) 343.
- French commerce in, (31) 596.
- fruit color, (38) 443.
- green, bacterial count, (40) 658.
- green, value in the diet, (40) 564.
- greenhouse culture, (38) 39.
- handbook, (27) 144.
- harvesting and marketing, (31) 898.
- harvesting and storing, (37) 646; (38) 95.
- heating, effect on vitamin content, (40) 565.
- importance in the dietary, (34) 40.
- imports into United States, (26) 237.
- improvement by selection, (37) 240.
- insects affecting, (27) 159, 756; (28) 156, 248; (29) 852; (30) 53, 240, 454, 852; (31) 438; (32) 753; (33) 98, 153, 746; (34) 651; (35) 55; (37) 256, 895; (38) 54, 558; (39) 140, 160, 656, 861; (40) 245, 649, 747, 854.
- insects affecting in Porto Rico, (33) 59; (40) 854.
- insects affecting in Trinidad, (40) 352.
- inspection in Canada, (26) 157.
- inspection in Queensland, (27) 39.
- introduction into Philippines, (27) 537.
- irrigation, (26) 539.
- irrigation experiments, (28) 558.
- killing by freezing, (32) 42.
- losses in cooking, (28) 460.
- marketing, (27) 539; (28) 593; (32) 287, 688; (33) 692; (35) 892.
- marketing—
 - cooperatively, (26) 92; (29) 392.
 - experiments, (28) 235.
 - in Holland, (31) 490, 635.
 - in New York, (38) 293.
 - in western Canada, (36) 493.
- methods of analysis, (32) 109.
- millipedes affecting, (26) 458.
- molluscan pest, (39) 655.
- mulching experiments, (36) 236; (38) 344.
- mulching v. clean culture, (33) 534.
- mycology of, (26) 355.
- nomenclature, (32) 337.
- northern grown, in Porto Rico, (33) 536.
- northern varieties in Porto Rico, (39) 39.
- notes, (29) 338.
- nutritive value, (29) 60.
- of California, handbook, (29) 435.
- Jamaica, notes, (29) 145.
- Philippines, list, (27) 537.
- Trinidad, culture and use, (40) 763.
- Trinidad, meals from, (40) 863.
- origin and history, (26) 260; (33) 638.
- overhead irrigation, (36) 640.
- packing, (26) 237.
- packing and sale in Michigan, (33) 438.
- Philippine, vitamin content, (40) 410.
- picking maturity, (37) 543.
- plant lice on, control, (39) 657.
- planting—
 - on school grounds, (28) 694.
 - table, (33) 238.
 - time, (39) 139.
- pollination by bees, (38) 264.
- pollination experiments, (29) 235.
- preparation, (29) 60.
- preparation—
 - and preservation, (40) 67.
 - and use, (32) 253.
 - for exhibition, (31) 693.
- preservation, (30) 443; (35) 266, 616, 715, 842; (39) 195, 316, 717, 718.

Vegetables—Continued.

- preservation by pressure, (32) 416.
- preserving alone and with meat, (34) 365.
- preserving and processing, (30) 316.
- prices in Bern, (32) 162.
- processing for exhibition, (36) 319.
- protection from frost, (33) 141.
- purchasing and use, (38) 867.
- quarantine law in Missouri, (26) 854.
- recipes, (37) 670.
- removal of Bordeaux mixture stains from, (35) 644.
- sap studies, (32) 139.
- score cards for, (39) 542; (40) 196.
- seed production, (31) 524.
- seeding and transplanting, (39) 139.
- selecting and staging for exhibition, (29) 898.
- shipping, (39) 843, 849.
- sodium nitrate for, (39) 328.
- spray calendar, (39) 345.
- sprayed, arsenic on, (38) 54.
- spraying, (27) 842; (29) 235; (32) 834; (33) 439.
- standard barrel for, (32) 499.
- standard containers for, (38) 40.
- standardization, (38) 41.
- sterilization for the home, (36) 17.
- storage, (38) 95, 241, 292, 345, 442; (39) 418, 843; (40) 44, 150, 245, 864.
- storage on the farm, (32) 486.
- storage, ventilation of, (31) 533.
- suitability for jelly making, (35) 418.
- surplus, marketing and conserving, (38) 90.
- transportation, (35) 835.
- transportation and storage investigations, (30) 739.
- treatise, (28) 435, 538, 740.
- typhoid infection through, (26) 661; (27) 766; (28) 258; (38) 166.
- use in Surinam, (28) 761.
- use in the diet, (27) 567; (29) 862; (38) 166; (40) 359, 564.
- varietal adaptation, (40) 147.
- varieties, (27) 438, 842; (28) 538; (29) 235; (30) 441; (31) 336, 732; (32) 45, 232, 337, 437, 438; (33) 43, 338, 637; (34) 231, 436, 635; (36) 39, 137, 443, 838; (37) 240, 241, 645, 832; (38) 142, 641, 842.
- varieties—
 - at Wisley, (33) 536.
 - for Georgia, (34) 436.
 - for western Washington, (34) 796.
- variety tests, (39) 444; (40) 444.
- washing in canning factories, (37) 416.
- water content as affected by cooking, (26) 462.
- wholesale distribution, (33) 692.
- winter, as human food, (35) 859.
- yield limitation experiments, (28) 740; (30) 343.
- Vegetarian diet of Japanese monks, (30) 863.
- Vegetarianism, world-wide application of, (26) 359.
- Vegetarians and nonvegetarians, metabolism of, (33) 263.
- Vegetation—see also Flora, Plants, etc.
- adaptation to climate, (37) 725.
- as affected by—
 - atmospheric impurities, (26) 230; (30) 32.
 - chemical fumes, (29) 547; (30) 432; (38) 429.
 - coal tar vapors, (30) 647; (32) 826.
 - frost, (27) 523.
 - lime, (26) 325.
 - manganese sulphate, (26) 226.
 - radioactive substances, (32) 34.
 - radioactivity, (30) 524.
 - salts of the soil, (27) 215.
 - smoke, (27) 230; (31) 628; (32) 422.
 - smoke and gas, (38) 28.
 - soils, (29) 513.
 - soot, (31) 826.
 - tarred roads, (27) 30, 333; (28) 38.
 - ultraviolet rays, (26) 430; (29) 130.
 - X-rays, (33) 31.
- as an indicator of agricultural value of soils, (30) 628.
- British, treatise, (27) 328.
- climatic injury to, (36) 431.
- distribution in United States, (40) 130.
- effect on—
 - composition of drainage water, (26) 421.
 - movement of water in soils, (30) 121.
 - rainfall, (39) 418.
 - soil temperature, (30) 122.

Vegetation—Continued.

- establishment in ravines, (26) 643.
- growth on volcanic ash, (28) 219.
- in Australia, climatic factors, (40) 716.
- rain-forest and desert mountains, (38) 330.
- South Africa, (37) 526.
- vicinity of Leyni, (31) 35.
- movements of in Salton Sink, (33) 525.
- native, of Colorado, (37) 209.
- of a desert mountain range, (36) 27.
- of a wild hay meadow, (32) 329.
- Breckland, ecology, (40) 424.
- Cape Breton Island, (40) 152.
- East Friesland, (30) 321.
- glacial plunge basin in New York, (40) 326.
- Long Island, dynamic studies, (39) 730.
- Nantucket, (33) 27.
- New York, (35) 146.
- northern Florida, (33) 525.
- Paraguay, (38) 524.
- Pinus taeda belt of Virginia and the Carolinas, (37) 435.
- Sable Island, (29) 242.
- sand hills of Nebraska, (31) 425.
- south Florida, (32) 526.
- southeastern Washington and adjacent Idaho, (38) 824.
- Tooele Valley, Utah, (30) 628.
- on steppes of Spain, (39) 122.
- prairie, studies, (38) 521.
- relation to—
 - electricity, (27) 231.
 - nitrogen content of water, (39) 332.
 - soil moisture, (30) 223.
- Rocky Mountain, monograph, (37) 434.
- role of water and light in, (27) 330.
- specialization in, (32) 34.
- spring, precocity, (37) 653.
- tests for fertilizers, methods for making, (33) 711.
- Vegetative associations in Manti National Forest, climatic factors, (39) 809.
- Vellosoella cajani n.g. and n.sp., description, (34) 52.
- Velvaslawn sandweed killer and fertilizer, analyses, (33) 735.
- Velvet bean—
 - caterpillar, *see* *Anticarsia gemmatilis*.
 - feed, analyses, (40) 72, 571.
 - feed, description, (40) 72.
 - feed, flaked, analyses, (40) 571.
 - meal, analyses, (38) 572; (40) 571.
 - meal, digestibility, (39) 475.
 - meal, feeding value, (39) 370, 474, 482, 784; (40) 279, 672, 874.
 - meal, identification, (38) 638.
 - meal v. cottonseed meal for cows, (38) 680.
- Velvet beans—
 - analyses, (26) 362; (29) 271, 569; (32) 862.
 - as cover crop, (31) 635; (34) 736.
 - cover crop for coconuts, etc., (33) 535.
 - forage crop, (38) 336; (39) 231.
 - grazing crop, (39) 577.
 - green manure, (32) 423; (35) 337; (37) 320.
 - bacteria as affected by acidity, (39) 722.
 - botanical studies, (37) 328.
 - breeding experiments, (27) 338.
 - Chinese, globulin of, (39) 202.
 - Chinese, yields, (39) 434.
 - crossing with Lyon beans, (33) 34.
 - culture, (30) 335.
 - culture—
 - and use, (37) 445; (39) 538.
 - continuous, (31) 732.
 - experiments, (27) 336, 841; (30) 632; (33) 31; (35) 528; (36) 332; (37) 529, 729; (38) 33, 827; (40) 230.
 - in Georgia, (38) 342.
 - Guam, (40) 328.
 - Mississippi, (38) 342.
 - North Carolina, (31) 132.
 - Philippines, (26) 361.
 - Rhodesia, (27) 32, 637.
 - under dry farming, (30) 435.
 - with corn, (39) 529.
 - description, (30) 828.
 - effect on nitrogen content of soils, (31) 733.
 - effect on yield of corn, (37) 29.
 - feeding value, (39) 575; (40) 76, 573, 772.
 - fertilizer experiments, (26) 631; (37) 635; (40) 230.
 - for cattle and pigs, (38) 770.
 - for steers, (36) 563.

Velvet beans—Continued.

- Georgia and Alabama varieties, origin, (40) 141.
- Georgia, notes, (33) 533.
- growing with corn, (40) 729.
- hybridization experiments, (27) 338; (29) 228; (31) 734; (34) 431; (35) 829.
- insects affecting, (27) 155.
- notes, (26) 362.
- pure lines, (27) 339.
- seed and pod structure, (38) 638.
- selection experiments, (37) 636.
- v. cottonseed meal for cows, (29) 576.
- varieties, (26) 631; (30) 435; (37) 635, 636, 729; (38) 342; (40) 729.
- Veneer industry in United States, (30) 845.
- Veneral disease, granular, in cattle, (31) 779.
- Vengai, notes, (29) 443.
- Vent gleet in hens, notes, (32) 584.
- Ventilation—
 - and heating, treatise, (29) 390.
 - digest of data, (31) 265.
 - effect on—
 - appetite, (33) 664.
 - gaseous exchange, (33) 70.
 - hydrogen-ion concentration of blood, (34) 260.
 - kitchen, for hotels, (33) 68.
 - modern practice in, (30) 893; (31) 387.
 - notes, (27) 461; (30) 563.
 - of farm buildings, (32) 592.
 - of stables and dwellings, (30) 691.
 - poor, effect of, (31) 363; (34) 185.
 - relation to respiration of fruits, (29) 135, 538; (31) 533.
 - studies, (28) 213; (32) 565; (34) 70, 192, 416.
- Venturi flume, description and tests, (37) 282.
- Venturia—
 - cafficola, notes, (38) 51.
 - crataegi, pycnidial stage, (37) 550.
 - emergens n.sp. on Hevea, (39) 452.
 - inaequalis—
 - as affected by cold, (34) 538.
 - development of perithecia in, (35) 351.
 - notes, (34) 247, 843, 846; (36) 347; (38) 647, 852.
 - overwintering, (38) 151.
 - perithecia of, (31) 449.
 - studies, (30) 848; (31) 645.
 - treatment, (40) 749.
 - pomi, notes, (33) 647; (36) 348; (38) 251, 546, 550.
- pyrina—
 - notes, (34) 247, 846; (38) 852, 853.
 - summary of information, (40) 252.
 - summer form of, (31) 749.
 - spp., infection experiments, (33) 148.
 - spp., investigations, (33) 347.
 - spp., notes, (30) 541.
 - spp., treatment, (31) 749.
- Veratrin—
 - detection in water, (34) 410.
 - in Liliaceae, (33) 177.
- Verbascum thapsus, notes, (30) 145.
- Verberna bud moth, studies, (33) 255.
- Verbenas—
 - cut, preservation, (31) 837.
 - inheritance studies, (40) 131.
- Verrelli Rice Experiment Station, work in 1909, (26) 42.
- Vermicularia—
 - atramentaria, notes, (36) 544.
 - capsici, notes, (36) 48; (38) 548.
 - circinans, notes, (31) 539.
 - curcumae, notes, (38) 548, 849.
 - sacchari, notes, (37) 553.
 - sp., notes, (30) 47.
 - varians, notes, (32) 146.
 - xanthosomatis n.sp., notes, (37) 148.
- Vermifuges—
 - efficiency, (33) 278.
 - tests, (28) 80.
- Vermin—
 - body, remedies, (34) 356; (36) 551.
 - injurious in Norfolk and Oxfordshire, (40) 255.
 - remedies, (36) 853.
- Vermingo, insecticidal value, (31) 350.
- Vermineous—
 - bronchitis in bovines, (31) 85.
 - intoxication, investigations, (31) 678.
 - toxins, review of investigations, (30) 278.
- Vermont—
 - College, notes, (27) 494.

Vermont—Continued.

Dairymen's Association, report, (29) 774.

Station—

financial statement, (27) 599; (29) 194.
 notes, (26) 495; (29) 197, 498; (31) 198; (33) 199; (36) 236, 600; (37) 499, 797; (38) 98, 499.
 publications, (25) 692; (36) 294.
 publications, distribution, (36) 598.
 report, (33) 97; (36) 294, 598; (38) 497.
 report of director, (27) 599; (29) 194.

University, notes, (26) 495; (27) 700; (28) 94, 699; (29) 197, 498, 700; (30) 497; (31) 198, 597, 900; (32) 696; (33) 199; (34) 97, 900; (35) 197, 597; (36) 296, 600; (37) 99, 499, 700, 797; (38) 98, 499; (39) 198.

Vernin—

and guanin pentosid, identity, (27) 407.
 in malt sprouts, (26) 24.
 in sugar beets, (28) 810.

Veronica diseases, notes, (31) 546.

Veronicella—

lapis in Porto Rico, (39) 58.
 occidentalis, notes, (40) 56.

Verruga—

and Carrion's fever, identity, (30) 658.
 and Oroya fever, identity, (37) 356, 377.
 etiology and transmission, (29) 262.
 investigations, (32) 350; (34) 355, 858.
 relation to lizards, (31) 847.
 transmission by—

biting flies, (32) 248.
 insects, (37) 356, 358, 460.
 Phlebotomus, (30) 252.
 sand flies, (29) 856.

vector of, (30) 658.

Vertebrae of animals, studies, (26) 353.

Vertebrates—

anatomy of, (28) 668.
 Australian, erythrocytes of, (34) 577.
 comparative anatomy, (40) 777.
 treatise, (27) 452.

Verticillium—

alboatrum—

affecting okra, (31) 343; (38) 851.
 affecting potatoes, (27) 247; (31) 345.
 infection experiments with, (27) 247.
 notes, (26) 847; (29) 243, 444, 646; (30) 351, 649; (32) 136.
 studies, (37) 49, 350; (40) 51.
 treatment, (39) 250.

diseases, studies, (39) 852.

heterocladium—

description, (33) 459.
 notes, (27) 860.
 on citrus white fly, (38) 157.]
 puparium, notes, (29) 562.
 sp. on potatoes, (32) 239.
 sp., relation to apple rot, (33) 348.
 wilts, studies, (33) 244.

Vesicular eruption—

in horses and bovines, (26) 373, 678.
 prevalence in Prussia, (27) 181.

Vespa—

crabro, *see* Hornet, European.
 vulgaris injurious to wheat, (37) 667.
 Vespamima sequoia, studies, (31) 652.
 Vesperus xatarti, notes, (29) 858.
 Vessels in wood, notes, (26) 51.

Vetch—

analyses, (26) 770; (28) 463.
 and oats, fertilizer experiments, (40) 134.
 and oats for green fallow, (40) 229.
 aphid, predatory enemy of, (30) 459.
 as affected by—
 lithium salts, (28) 526.
 smoke, (31) 521.
 soil acidity, (40) 134.
 as cover crop, (32) 332, 431; (37) 833.
 forage crop, (31) 829.
 reen manure, (39) 31; (40) 24.
 green manure for citrus, (32) 233.
 winter cover crop, (40) 133.
 bacteria as affected by acidity, (39) 722.
 behavior of organic substances in, (39) 526.
 betains in, (27) 203; (28) 312.
 coccinellids affecting, (33) 256.
 composition as affected by companion crop, (26) 617.
 composition at different stages, (39) 836.

Vetch—Continued

cost of production, (32) 527.

culture, (27) 32, 337; (30) 37; (32) 431.

culture—

and uses, (28) 337.
 experiments, (28) 231, 735; (32) 132, 529, 530; (34) 138; (36) 32; (38) 634; (39) 126, 735; (40) 735.
 for winter forage, (38) 735.
 in North Carolina, (31) 132.
 the South, (29) 233.
 Washington, (37) 96.
 western Nebraska, (32) 224.
 on moorland, (30) 229.

under dry farming, (30) 435; (31) 429.

description and agricultural value, (36) 635.

diseases, notes (31) 841.

effect on activity of soil fungi, (36) 215.

effect on milk and butter, (34) 570.

fertilizer experiments, (26) 631; (28) 734; (34) 517; (39) 624; (40) 735.

fertilizing value, (26) 438; (27) 831; (29) 233; (35) 125.

forcing with radium, (28) 825.

germination as affected by depth of planting, (36) 438.

growing with grain, (40) 822.

growth as affected by radioactivity, (28) 731.

hairy—

as cover crop for orchards, (33) 240; (34) 231.

as fall-sown cover crop, (39) 532.

as green manure, (32) 124; (33) 338.

culture, (31) 43; (33) 734.

hairy, culture—

experiments, (27) 735; (33) 33.

in cotton belt, (32) 533, 534.

in Porto Rico, (29) 631.

in Texas, (40) 729.

hairy—

effect on soil moisture, (38) 418.

fertilizing value, (26) 233.

harvesting for seed, (38) 431.

liming experiments, (39) 221.

seed production, (28) 139.

sowing with fall crops at different rates, (40) 243.

hay—

analyses, (33) 759.

chloroform extract of, (31) 71.

composition, (27) 668.

digestibility, (27) 669; (37) 168.

for milk and beef production, (32) 773.

mineral constituents, digestibility, (40) 769.

hydrocyanic acid content, (28) 477.

injury by bollworm, (39) 764.

inoculation, (40) 215, 822.

inoculation experiments, (28) 426.

insects affecting, (39) 556.

kidney—

as meadow crop, (40) 136.

liming experiments, (40) 322.

variety tests, (40) 232.

milk, toxicity, (37) 780.

native, analyses, (27) 68.

nodule bacteria of, (32) 33, 327; (39) 338.

nodule production in, (32) 727.

notes, (26) 362; (28) 532.

on moor soils, inoculation, (40) 822.

production in Spain, (28) 736.

purple, (39) 539.

purple, as cover crop for citrus, (34) 344.

rate of seeding tests, (27) 836.

reaction to illumination, (33) 129.

relation of tops to roots, (31) 733.

root development with other crops, (26) 129.

sand, culture under dry farming, (36) 529.

Sclerotium disease, experimental, (39) 753.

Scotch, as green manure, (32) 423.

seed—

adulteration and misbranding, (27) 141; (29) 636.

germination energy, (29) 538.

germination tests, (28) 338; (29) 740.

hay, digestibility, (38) 368.

impermeable, viability, (35) 740.

inspection in Maryland, (31) 438; (36) 442.

oil content, (27) 716.

production, (40) 431.

Vetch—Continued.

- spring, grow on volcanic ash, (32) 36.
- treatise, (30) 737.
- utilization of sugar by, (36) 125.
- varieties, (26) 631; (27) 32, 836; (29) 222; (32) 226, 827; (33) 33; (35) 526; (37) 332, 531; (38) 431, 634; (39) 227, 738; (40) 735.
- water requirement, (32) 127.
- wild, effect on baking quality of wheat, (34) 558.
- yield as affected by sulphur, (34) 726.
- yields, (39) 434.

Veterinarians—

- of Prussia, report, (26) 373.
 - ophthalmology for, (31) 376.
- Veterinary—see also Animal diseases.**
- anatomy, handbook, (37) 778.
 - bacteriologist of Union of South Africa, report, (29) 581.
 - bacteriology, treatise, (26) 276.
 - biologic products, manufacture and sale, regulation, (39) 357.
 - college of eastern New York, (29) 197.
 - colleges, accredited, (29) 770.
 - courses in Canada, (38) 296.
 - curriculum, physiology in, (31) 492.
 - department of—

- Assam, report, (32) 81; (36) 879.
 - Baluchistan, report, (37) 274.
 - Bengal and Assam, report, (30) 180.
 - Bengal, report, (26) 578; (30) 778; (31) 177; (32) 678; (35) 483; (37) 780.
 - Bihar and Orissa, report, (32) 272; (36) 879.
 - British East Africa, report, (32) 373.
 - Burma, report, (26) 374; (31) 177; (32) 373; (36) 879.
 - Madras Presidency, report, (37) 274.
 - Punjab, report, (32) 272; (35) 483; (37) 78.
- director general of Canada, report, (26) 881; (31) 79, 176.
- directory of Saxony, (28) 375.
- dissection, guide, (26) 373; (34) 480.
- education in Prussia, (30) 793.
- handbook and visiting list, (35) 379.
- high schools in Austria, (28) 297.
- hygiene, treatise, (32) 79.
- inspection in Brazil, (34) 372.
- inspector examination, (40) 778.
- instruction, (26) 297.
- instruction in—
- Austria, (34) 674.
 - Belgium, (28) 297.
 - Bengal, (26) 578.
 - Bihar and Orissa, (30) 577.
 - India, (31) 177.
 - United Provinces, (38) 180.

laboratory—

- apparatus, (36) 676.
- methods of the Army, (39) 786.

law, essentials of, (35) 278.

medicine—

- biologic products in, (27) 577.
- guide, (27) 180.
- handbook, (26) 882; (35) 278; (37) 176, 778.
- history and development, (28) 583.
- lectures on, (39) 582.
- manual, (31) 376.
- progress in, (28) 278; (29) 301, 498, 581; (34) 876.
- relation to entomology, (33) 152.
- teaching, (34) 195.
- treatise, (26) 480, 578; (27) 576; (28) 78; (29) 476; (32) 578, 676.

obstetrics, handbook, (32) 777.

obstetrics, treatise, (38) 78.

pathology, textbook, (34) 477.

pharmacology and therapeutics, textbook, (38) 580.

physiology, manual, (27) 679.

police, international, formation, (34) 306.

posology and therapeutics, handbook, (34) 777.

post-mortem technique, (39) 582.

progress in Punjab, (30) 477.

questions and answers of Pennsylvania state board, (31) 376.

sanitary board of Denmark, report, (29) 377.

science, notes, (28) 667.

science, teaching in agricultural course, (29) 500.

service in France, (28) 78; (29) 880; (35) 279.

service in Norway, (39) 787.

Veterinary—Continued.

- service in Saxony, (28) 79.
- specimens, preparation for examination, (36) 778.
- surgery and obstetrics, handbook, (27) 881; (28) 583.
- surgery, treatise, (27) 475; (35) 73.
- surgical operations, textbook, (38) 781.
- therapeutics, treatise, (30) 379; (36) 675; (37) 762.
- toxicology, treatise, (28) 880.
- work in Argentina, (35) 678.
- work in foreign countries, (30) 476; (34) 576.
- work in Union of South Africa, (35) 678.

Vetularctos inopinatus n.g. and n.sp., notes, (38) 760.

Vibidia, 12-guttata, notes, (36) 754.

Vibron septique, biochemistry, (40) 577.

Viburnum borer, notes, (28) 155.

Viburnum lantana as a hedge plant, (37) 241.

Viburnums for lawn planting, (39) 244.

Vicia—

- americana, morphology, (31) 624.
- ash constituents of, (30) 334.
- cracca—

 - analyses, (33) 466.
 - culture experiments, (28) 431; (36) 436.
 - tests, (33) 632.

- faba—

 - aerating system of, (35) 132.
 - as affected by sodium chlorid, (40) 435.
 - permeability of root tips, (28) 126.
 - respiration in, (27) 523.
 - seed, soaking, (40) 727.
 - sativa, betains in, (27) 203.
 - sativa, dietary properties, (40) 762.
 - spp., culture experiments, (28) 532.
 - villosa, fertilizing value, (26) 233.

Vicianin—

- constitution, (26) 201.
- decomposition by enzym action, (31) 14.

Vicianose, constitution, (26) 201.

Vicine, notes, (33) 311.

Vicuña, monograph, (27) 771.

Vicuña, value as domestic animals, (27) 470.

Vigna—

- catjang, analyses, (27) 68; (29) 215.
- lutea, notes, (26) 362.
- sinensis—

 - analyses and digestibility, (28) 464.
 - anatomical structure, (31) 314.
 - description, (29) 59.
 - spp., studies, (26) 635.

Villa lloydi n.sp., description, (31) 63.

Village—

- communities, improvement, (27) 898.
- communities in European farming, (29) 789.
- improvement clubs, (31) 690.
- life after the war, (40) 687.
- Moderne at Ghent exposition, (30) 301.
- moral life in middle west, (33) 787.
- of Grand Canyon, development, (40) 248.
- reconstruction in France, (39) 689.

Villulus chilensis n.g. and n.sp., description, (39) 362.

Vilmorin, M. de, biographical sketch, (39) 200.

Vinasse—

- as a fertilizer, (31) 125; (32) 219.
- distillery, fertilizing value, (38) 515.
- effect on beet pulp, (27) 210.
- from sugar beet distilleries, utilization, (26) 528.

Vinca—

- rosea as a host of eelworm, (34) 349.
- rust, notes, (28) 350.

Vine—

- borers, notes, (34) 361.
- curculio, injurious to roses, (29) 657.
- diseases in Württemberg, (29) 845.
- diseases, notes, (26) 139; (31) 841.
- flower gall midge, notes, (30) 756.
- growers' schools, uniformity of instruction in, (31) 392.
- little leaf, studies, (36) 849.
- louse, notes, (30) 845.
- shoots, utilization, (26) 613.
- trimmings for livestock, (28) 265.

Vinegar—

- alcohol determination in, (40) 712.
- analyses, (26) 312; (27) 64; (30) 712; (31) 113; (33) 753.
- analyses, interpretation, (28) 863.

Vinegar—Continued.

- ash, notes, (27) 410.
- changes in acid content, (26) 261.
- chemistry and biology of, (29) 116.
- cider—
 - abnormal factors of, (32) 809.
 - adulteration, (31) 113.
 - composition, (28) 361.
 - furfural in, (32) 808.
 - generator process, composition, (30) 363.
 - levulose and dextrose content, (26) 261.
 - manufacture, (30) 316, 813.
 - methods of analysis, (32) 297.
 - volatile reducing substances in, (36) 299; (37) 112.
- composition, control, (26) 506.
- definition, (34) 67.
- diseases, notes, (38) 414.
- distilled, as affected by wooden casks, (27) 114.
- dried grains, analyses, (35) 867; (38) 67.
- eels, destruction, (33) 661.
- eels, harmlessness, (33) 366.
- effect of X-rays on fermentation, (27) 231.
- examination, (26) 208; (27) 268; (37) 112.
- fermentation, (38) 365.
- from coconut palm sap, (30) 16.
- maple sap skimming, analyses, (34) 714.
- Minnesota apples, (39) 316.
- surplus honey, (36) 717.
- waste fruits, (38) 414.
- grains, analyses, (37) 471; (38) 665; (39) 167; (40) 571.
- grains, digestibility, (39) 171.
- home manufacture, (40) 116.
- industry in Uruguay, (32) 744.
- inspection, (34) 67.
- judging, (26) 208; (27) 808.
- labeling, (26) 762.
- "l'œclair bleu" test, (40) 311.
- low-grade, improving, (27) 313.
- malt, standards, (27) 808.
- manufacture, (32) 207; (34) 67; (37) 112, 715; (40) 116, 414, 808.
- manufacture—
 - from grapes, (26) 809.
 - milk, (30) 378.
 - pure apple juice, (30) 16.
 - waste grapes, (28) 395.
- treatise, (33) 18.
- methods of analysis, (27) 112, 205, 714; (28) 614; (29) 798; (32) 109.
- microbiology of, (26) 372.
- orange, manufacture, (30) 814; (40) 715.
- pineapple, manufacture, (30) 813.
- preparation from wine, (36) 801.
- protein content, (27) 64.
- pyridin in, (26) 209.
- refuse, analyses, (33) 568.
- regulation of sale, (27) 463.
- standards for, (26) 762.
- studies, (37) 716.
- studies and analyses, (39) 316.
- sugar, notes, (30) 668.
- treatise, (28) 511.
- Vineland horticultural experiment station, Ontario, report, (37) 832.
- Vines—
 - culture, (36) 535.
 - culture by machinery, (26) 893.
 - culture experiments, (26) 237.
 - culture in California, treatise, (33) 441.
 - destruction by Chinese cotton scale, (26) 556.
 - for southeastern Alaska, (33) 638.
 - hail injury to, (33) 734.
 - handbook, (27) 346.
 - insects affecting, (26) 139.
 - manual, (26) 139.
 - of Philippines, (33) 433.
 - ornamental, for Kansas, (31) 537.
 - phenological data, (33) 825.
 - propagation, (34) 533.
 - pruning, (37) 242.
 - prunings as fodder, (33) 568.
 - quarantine law in Missouri, (26) 854.
 - sulphur as fertilizer for, (34) 331.
 - training, Oppenheim method, (27) 539.
 - varieties, (38) 842.
- Vineyard—
 - hoeing machines, tests, (28) 187.
 - laborers in Italy, diet, (27) 464.
 - pests, natural enemies of, (30) 455.

Vineyards—see also Grapes and Viticulture.

- as affected by oxalic compounds, (29) 49.
- cover crops for, (27) 144, 743.
- failing, restoration, (31) 339.
- fasciation and coalescence in, (30) 353.
- fertilizer experiments, (27) 144.
- grafted, starting, (28) 640.
- in South Australia, (31) 836.
- laws for protection in Michigan, (33) 438.
- lime for, (28) 223.
- of Cape of Good Hope, American stocks for, (27) 645.
- of Columbia River basin, (35) 646.
- phylloxera-infested, reconstitution, (30) 251, 344; (35) 343; (37) 344.
- protection from frost and other climatic disturbances, (35) 343.
- reconstitution, (26) 743; (27) 442, 644; (28) 742, 840; (29) 238, 356; (31) 47.
- reconstitution in Sicily, (34) 740.
- reconstruction without grafting, (30) 145.
- spraying, (30) 344.
- Vinification, experiments in, (30) 612.
- Vinsonia stellifera, destruction by mites, (26) 553.
- Viola cucullata, new leaf spot of, (36) 547.
- Violas, varieties, (31) 48.
- Violet—
 - diseases, studies, (29) 753.
 - rays, penetration of leaves by, (31) 129.
 - rays, penetration of plant organs by, (33) 427.
 - rove beetle, studies, (33) 563.
 - smut, prevention, (34) 750.
- Violets—
 - as host plant of red spider, (32) 157.
 - bibliography, (29) 543.
 - bud selection experiments, (37) 240.
 - cut, preservation, (31) 837.
 - fertilizer experiments, (26) 739.
 - red spider on, (39) 65.
 - Thielavia disease of, (29) 650.
 - treatise, (29) 149, 543.
- Virachola (Deudorix) livia, notes, (32) 151.
- Virgin Islands Station, notes, (38) 608.
- Virginia—
 - coastal plain, economic products of, (29) 513.
 - College, notes, (26) 397; (27) 300; (28) 398; (29) 197; (31) 498, 799; (33) 400; (34) 497; (35) 98, 500; (37) 300; (38) 700; (39) 400; (40) 799.
 - creeper, dissemination by English sparrows, (34) 629.
- Station—
 - financial statement, (29) 696.
 - notes, (26) 495; (27) 300; (29) 900; (30) 497, 798; (31) 498, 799; (32) 798; (34) 497; (35) 98, 500; (36) 197; (37) 99, 300, 500; (38) 98, 198, 700, 900; (39) 97, 400; (40) 298.
 - report, (33) 793; (39) 94, 398.
 - report of director, (29) 696.
- Truck Station, notes, (26) 495; (27) 100, 399, 600; (28) 398, 799; (30) 497, 798; (31) 498; (32) 696, 798; (35) 500, 597; (37) 500, 899; (38) 99, 198; (39) 97; (40) 99.
- Viruses—
 - attenuation in blood of cholera hogs, (27) 786.
 - filterable—
 - discussion, (26) 676; (40) 255.
 - diseases caused by, (26) 681.
 - notes, (27) 780; (32) 475; (34) 575.
 - review of literature, (27) 181.
 - ultrafiltration of, (28) 381.
 - uniform method of filtration, (33) 483.
 - latent, paper on, (32) 271.
 - mixed, experiments with, (26) 885.
 - of human tuberculosis, investigations, (26) 884.
 - of lupus in man, investigations, (26) 884.
 - preparation and sale in United States, (32) 875.
 - preservatives in, toxicity, (38) 283.
 - propagation and sale, (28) 677; (39) 787.
 - ultramicroscopic, notes, (34) 575.
 - ultraviable, notes, (32) 272.
- Viscera, fermented, use in bread making, (40) 461.
- Viscogen, effect on creaming ability of milk, (36) 76.
- Viscose as casing for sausages, (32) 660.
- Viscosity, notes, (35) 734.
- Viscum—
 - album—
 - germination studies, (30) 521.
 - parasitism, (31) 56.
 - transpiration in, (31) 324; (32) 522.
 - cruciatum, infection experiments, (29) 243.
 - verruculosum, notes, (36) 652.

Vitamin A, *see* Fat-soluble A and Vitamin, fat-soluble.

Vitamin—

- antiberiberi, distribution, (40) 868.
- antineuritic—
 - as affected by heat, (38) 481.
 - identity with water-soluble B, (38) 503.
 - in cereals, (38) 581, 869.
 - studies, (39) 365; (40) 271, 272.
- antiscorbutic, studies, (40) 272, 869.
- B, *see* Water-soluble B and Vitamin, antineuritic.
- effect on growth, (30) 865.
- factor in animal tissues, (39) 665, 873.
- fat-soluble, studies, (39) 770.
- fraction—
 - determination in milk, (30) 508.
 - from yeast, (35) 311.
 - from yeast and rice polishings, (29) 664.
 - from yeast, chemistry of, (29) 463.
 - from yeast, studies, (39) 667.
- hypothesis and deficiency diseases, (40) 70.
- milk as source of, (39) 570.
- requirements for maintenance and growth, (39) 665.
- theory, discussion, (33) 279.
- water-soluble, studies, (40) 271.

Vitamins—

- and amino acids in the diet, (32) 857.
- and diet, quantitative relationship, (32) 163, 164.
- and symbiotes, similarity, (40) 363.
- chemical nature, (35) 269, 711; (37) 411; (38) 580.
- chemistry of, (36) 314.
- destruction by alkalis, (36) 465.
- destruction by heat, (31) 660.
- determination in—
 - cereal products, (36) 465.
 - food products, (35) 472.
 - vegetables, (40) 410.
- digest of data, (32) 67, 662; (36) 161.
- effect on amino-acid content of media, (40) 201.
- effect on nutrition and growth, (33) 462.
- importance in diet, (32) 763.
- importance in nutrition, (32) 359.
- in animal nutrition, (40) 577.
- bacterial culture, (39) 668.
- brewers' yeast, (36) 864.
- corn, (39) 368.
- corn and wheat products, (39) 314.
- food, (31) 558.
- food, physiological value, (30) 865, 866.
- infant feeding, (40) 269.
- milk, (36) 665.
- Philippine vegetables, (40) 410.
- rice polishings, (30) 285.
- typhoid bacillus cultures, (39) 82.
- necessity for in diet, (31) 762.
- notes, (28) 261; (30) 561; (31) 362; (37) 468.
- pancreatic, use in malnutrition, (37) 65.
- paper on, (35) 100.
- relation to beriberi, (29) 169.
- relation to lipoids, (32) 561.
- review of investigations, (35) 166; (36) 363.
- rôle in metabolism of carbohydrates, (31) 463.
- rôle in nutrition, (35) 269, 472, 861.
- rôle in the diet, (38) 568.
- studies, (40) 363, 465, 563, 564, 565.
- treatise, (32) 578.

Vitellin, lysin content, (31) 559.

Viticultural—

- instruction in schools, (35) 646.
- school at Feldsberg, Austria, (27) 695.
- station at Lausanne, (35) 839.

Viticulture—*see also* Grapes and Vineyards.

- bibliography, (31) 339.
- in Algeria, (30) 741.
- Hungary, (30) 533.
- Japan, (33) 539.
- Portugal, (32) 838.
- sandy soils of Mexico, (30) 643.
- South Africa, (35) 839.
- Tuscany, (33) 440.
- papers on, (35) 343.
- review of literature, (30) 40.
- textbook, (35) 744.
- treatise, (30) 643; (37) 834.

Viticulturists, cooperative associations, (40) 893.

Vitis—

- cordifolia, ash analyses, (27) 801.
- riparia, seed oil of, (34) 501.

Vitis—Continued.

- spp., venation angles and leaf dimensions in, (28) 541.
- variation in floral structures of, (26) 742.
- vinifera—
 - and V. berlandieri, hybrids of, (30) 144.
 - in eastern America, (35) 646.
 - pollen germination in, (33) 539.
 - pruning, (32) 142.
 - pruning and training, (33) 142.
 - seeds, use in classification of varieties, (26) 46.
 - varieties, (32) 837.
- vulpina, senile changes in leaves, (32) 728.

Vivian experiment and demonstration farm, (34) 735.

Viviparity in Polyctenidae, (31) 452.

Viviparomusca, erection, (34) 253.

Vlei grass, analyses, (32) 166.

Voandzela—

- analyses, (40) 557.
- poissons, notes, (30) 235.
- poissons seed, analyses, (28) 359.
- subterranea—
 - agglutinating properties, (31) 774.
 - analyses and digestibility, (28) 464.
 - culture experiments, (27) 233; (35) 739.
 - digestibility, (26) 164.
 - oil content of seed, (27) 717.

Vocational—

- education—*see also* Agricultural education, vocational.
- administrative problems, (40) 692.
- agricultural, *see* Agricultural education, vocational.
- cultural value, (34) 897.
- evening courses for girls and women, (40) 692.
- Federal aid, (32) 11; (36) 701; (37) 597, 606, 798; (38) 395.
- Federal commission on, (30) 398.
- for negroes, (38) 92.
- in Arizona, (40) 394, 896.
- California, (37) 394; (38) 194; (40) 394.
- Connecticut, (40) 394.
- Delaware, (40) 394.
- Europe, (33) 596.
- Georgia, (40) 394.
- Illinois, (34) 598; (40) 596.
- Indiana, (31) 597; (33) 595; (40) 395.
- Iowa, (40) 395.
- Kansas, (40) 395.
- Kentucky, (40) 395.
- Maine, (40) 395.
- Maryland, (40) 896.
- Massachusetts, (30) 195; (38) 396; (40) 596.
- Michigan, (40) 395.
- Minnesota, (26) 391; (40) 596.
- Mississippi, (40) 395.
- Missouri, (40) 395, 396.
- Nebraska, (40) 597.
- Nevada, (40) 597.
- New Mexico, (40) 597.
- North Carolina, (40) 597.
- North Dakota, (40) 598.
- Oklahoma, (40) 598.
- Oregon, (38) 695, 696.
- Pennsylvania, (32) 596.
- Texas, (40) 598.
- United States, (37) 192; (38) 596, 597.
- United States and Canada, (31) 401.
- Utah, (40) 598.
- Washington, (40) 692.
- West Virginia, (40) 692.
- Wisconsin, (40) 692.
- issues in, (28) 90.
- law in New York, (37) 394.
- legislation for state system, (29) 596.
- notes, (32) 793; (40) 400.
- of girls in New York, (40) 597.
- report of Federal Board, (40) 793.
- statistics, (40) 595.
- treatise, (40) 196.

instruction in public schools, (27) 694.

schools—

- animal husbandry instruction in, (28) 92.
- cooking in, (33) 397.
- in Massachusetts, (32) 288.
- in New York, (32) 690.

- Vocational—Continued.
 schools—continued.
 need for, (28) 491.
 rural economics in, (27) 797.
 teachers, preparation, (39) 595.
 training for boys and girls, (28) 499.
- Volatile—
 acid, determination in wine, (35) 647.
 oils, production from wild plants, (26) 612.
- Volcanic—
 ash, analyses, (36) 429.
 ash, conversion into fertile soil, (37) 420.
 ash, Katmai, (40) 812.
 ash, reclamation, (28) 220.
 ashes, effect on soils, (29) 726.
 dust, effect on climate, (29) 720; (32) 509; (33) 806; (34) 415.
 dust, precipitation from the air, (30) 417.
 eruptions, relation to weather, (37) 619.
 rock, fertilizing value, (36) 332.
- Volcanoes, relation to climate, (29) 720, 721.
- Voies—
 destruction, (30) 545.
 eradication in Italy, (36) 852.
- Volna as a meat substitute, (26) 464.
- Volumenometer, description, (40) 208.
- Volumeter, automatic, description, (35) 185.
- Volumetric apparatus, calibration, (35) 415.
- Volutella fructi, temperature relations, (36) 649.
- Vultures of France, book, (26) 452.
- Wage earners, standard of living, treatise, (31) 360.
- Wages—
 and rural migration in France, (35) 496.
 Board of Great Britain, (40) 591.
 farm, in France, (30) 91.
 farm, in Iowa, (37) 91.
 farm, in United States, (33) 93.
 farm, increase in, (23) 292; (31) 190.
 in America and Europe, (26) 359.
 Australia, (29) 393.
 Chicago stockyards district, (32) 163.
 India, (27) 392; (31) 296; (34) 195.
 Sweden, (35) 793.
 United Kingdom, (29) 766.
 piece, in agriculture, (31) 894.
- Wagon—
 for heavy loads, description, (27) 191.
 tires, width of, (36) 787.
- Wagons—
 draft of, (33) 890.
 draft tests, (36) 338.
 farm, descriptions and tests, (26) 789.
 sizes and specifications, (36) 787.
 standardization, (32) 789; (34) 88.
- Wahnschaffe, Felix, biographical sketch, (31) 200.
- Waiters—
 instructions for, (32) 65.
 supervision of health of, (30) 863.
- Walking—
 effect on metabolism, (32) 765; (34) 260.
 energy expenditure in, (26) 871, 872.
- Walking-stick—
 effect of temperature on molting, (28) 353.
 life history, (26) 147.
- Wallothiella arcuthobii, studies, (33) 651.
- Walls—
 construction, handbook, (33) 291.
 masonry, preventing dampness in, (28) 786.
 retaining and storage, dimensions and stresses, (29) 183.
- Walnut—
 aberrant, notes, (26) 337.
 aphid, control, (39) 461.
 aphid, fungus enemy, (39) 464.
 aphid, remedies, (30) 345; (33) 557.
 aphid, studies, (31) 753.
 bacterial black spot, notes, (27) 654.
 blight—
 description, (32) 238.
 in eastern United States, (38) 455.
 notes, (34) 639; (35) 51.
 studies, (28) 342; (34) 545; (37) 756.
 treatment, (30) 345.
 borers, notes, (35) 656.
 bud moth, notes, (28) 554.
 caterpillar, *see* *Datana integerrima*.
 containing hazelnut kernel, (35) 449.
 curculio, *see* *Conotrachelus juglandis*.
 disease due to *Armillaria mellea*, (39) 58.
 diseases, descriptions, (28) 154; (35) 655.
 diseases, investigations, (28) 349.
- Walnut—Continued.
 diseases, notes, (38) 651.
 leaf disease, description and treatment, (32) 150.
 leaf mite, notes, (32) 651.
 mealy bug, notes, (29) 454.
 melasma, notes, (34) 56, 353.
 melasma, studies, (34) 447; (37) 756.
 oil, composition, (36) 803.
 oil, detection, (29) 613.
 oil, digestibility, (38) 868.
 root rot, treatment, (38) 152.
 scale, notes, (28) 156.
 seedlings, variation in, (36) 140.
 weevil, life history and habits, (28) 553.
 wood, utilization, (28) 544.
 worm in California, (40) 456.
- Walnuts—
 as affected by tarring roads, (26) 432.
 black—
 as host of *Archips argyrospila*, (27) 160.
 culture in Minnesota, (32) 840.
 development of fat in, (30) 411.
 root-pruning, (38) 44.
 varieties, (37) 143.
 bleaching, (26) 239.
 breeding, (34) 639.
 budding, (26) 542.
 crown gall affecting, (28) 447.
 culture—
 experiments, (32) 540.
 in Arizona, (33) 49; (34) 236.
 in California, (28) 342; (35) 145.
 distribution of nitrogen in, (36) 269.
 English—
 bacterial blight affecting, (27) 349.
 bearing dates, (33) 643.
 culture, (27) 41.
 diseases, (32) 238; (38) 52.
 French and Asiatic varieties, (34) 835.
 grafting, (34) 236.
 insects affecting, (28) 342; (40) 259.
 microscopic identification, (28) 565.
 new form, (30) 644; (32) 46.
 oak-like mutant of, (35) 840.
 parthenogenesis in, (30) 544.
 Persian—
 culture in Maryland, (40) 150.
 culture in southern Texas, (32) 539.
 in United States and Canada, (33) 143.
 monograph, (28) 543.
 pruning, (35) 145.
 Quercina, origin, (32) 338; (34) 236.
 stocks for, (32) 337.
 variability of yield, (38) 744.
 varieties, (37) 241.
 varieties in California, (32) 746.
 varieties in France, (28) 342.
- Wampe, description, (32) 742.
- Wapato as a duck food, (30) 545.
- Wapiti, hybridization experiments, (29) 171.
- War bread, analyses, (35) 367.
- War bread, notes, (33) 162.
- War-time dishes, recipes, (37) 63.
- Warble flies, *see* *Hypoderma* spp., *Bots, and Ox*
warble fly.
- Warblers of North America, (37) 846.
- Warehouse—
 Act, Federal, (35) 308.
 elevators, cooperative in Wisconsin, (28) 593.
 law in Texas, (33) 492.
- "Warmth of dawn" theory, (40) 314.
- Warp deposits in England, (29) 514.
- Wash bottle, nonspattering, description, (36) 13.
- Washers, strength and design, (32) 687.
- Washing powders as insecticides, (36) 753.
- Washington—
 Adams Branch Station, report, (37) 195.
 College, notes, (26) 194, 398, 797, 900; (27) 100, 494, 700; (28) 398, 600, 900; (29) 197, 399; (30) 96, 497; (31) 198, 498, 799; (32) 95, 696; (33) 199, 700; (34) 97, 600; (35) 799; (36) 296; (37) 798; (38) 99, 400, 800; (39) 400, 600, 699; (40) 99, 698, 900.
 Irrigation Institution, proceedings, (37) 281.
 Station bulletins, index, (36) 598; (38) 497.
 Station, financial statement, (26.) 795.
 Station, notes, (26) 194, 398, 696, 900; (27) 100, 494, 700; (28) 398, 600, 900; (29) 99, 197, 399; (30) 497; (31) 198, 498; (32) 95, 398, 696; (33) 199, 700, 900; (34) 600, 798; (36) 697; (37) 99, 798; (38) 99, 400, 800; (39) 400, 699; (40) 99, 698.

Washington—Continued.

- Station, report, (26) 795; (28) 796; (32) 796; (34) 796; (37) 96; (40) 797.
- Substation, Western, monthly bulletin, (39) 94, 196, 398, 598, 799, 899; (40) 97, 296, 397, 494, 694, 797.
- western station, report, (28) 599; (33) 97.
- Washingtonia—
disease of, (31) 845.
- filifera, culture in Arizona, (32) 233.
- Wasp parasite of *Phytalus smithi*, (40) 265.
- Wasp, parasitic, studies, (39) 566.
- Wasps—
and bees, differences, (38) 256.
- bembicine, of North America, (40) 264.
- digger, of North America, (28) 858.
- fossorial, studies, (28) 455.
- gall, type species, (38) 63; (40) 862.
- hunting, treatise, (35) 468.
- injurious to wheat, (37) 667.
- of Georgetown Museum, (32) 758.
- of Nebraska, (40) 554.
- of West Indies, (34) 857.
- pollination of alfalfa by, (26) 633.
- relation to *Nosema apis*, (27) 761.
- solcid, importation into Mauritius, (39) 869.
- solitary, natural history, (27) 359.
- studies, (40) 553.
- wood, Nearctic species, (39) 869.
- wood, studies, (30) 59.
- Wassermann reaction—
in rabbits after injection with luetic liver, (35) 383.
- technique, (32) 272.
- Waste products, utilization, treatise, (40) 415.
- Watabura n.g. and n.sp., description, (38) 857.
- Water—
absorbed, determination in soils, (31) 313.
- absorption—
and secretion by living plants, (34) 111.
- by butter, (32) 577.
- by timbers, (32) 48.
- in plants, studies, (28) 822.
- added, determination in ground meats and sausage, (37) 414.
- alkali—
effect on dairy cows, (30) 775.
- effect on dairy products, (27) 282.
- effect on lead, (30) 511.
- notes, (28) 27.
- still for, (28) 796.
- analyses, (26) 118; (27) 165, 317, 719, 817; (28) 27, 442, 618, 811; (29) 210; (30) 620; (31) 316, 358, 509; (32) 281, 357, 456, 487; (33) 165, 779; (34) 84; (35) 8, 83, 490, 663; (36) 86, 888; (37) 114, 693, 883; (38) 691.
- analysis—
reporting results of, (32) 807.
- textbook, (33) 206.
- treatise, (26) 418; (30) 12; (32) 807.
- and air, review of literature, (28) 115.
- and salt, physiology of, (28) 231.
- appropriation and distribution in Colorado, (31) 587.
- artesian—
and subartesian, of New South Wales, analyses, (27) 116.
- for irrigation in Montana, (36) 486.
- in Argerich, Argentina, (28) 214.
- in Australia, (29) 16; (33) 486; (34) 284, 483.
- in Black Hills vicinity, South Dakota, (40) 291.
- in Missouri, (31) 812.
- as affected by—
decaying *Nymphaea* rhizomes, (35) 579.
- storage and preservatives, (26) 418.
- ascent and descent in trees, (29) 524.
- bacterial content as affected by storage, (30) 713.
- bacteriological examination, (34) 284, 285, 286; (37) 187; (38) 11, 591.
- bacteriology of, (26) 174.
- bacteriology, treatise, (29) 814.
- bacteriotoxic action of, (33) 188.
- balance—
in rest and mountain climbing, (27) 768.
- of desert plants, (26) 530; (27) 29.
- of succulent plants, (26) 227.
- bath, description, (31) 811.
- bath for immersion refractometer, (27) 14.

Water—Continued.

- bibbs, discharge table for, (31) 784.
- biological analysis, (32) 205, 311.
- biology, treatise, (39) 554.
- black alkaline and calcium sulphate, close proximity, (29) 415.
- bog, effect on plants, (28) 733.
- bog, effect on *Tradescantia* root hairs, (29) 523.
- boiled, use in bread making, (28) 660.
- bottled, bacteria in, (35) 388.
- brackish, irrigation with, (30) 886.
- bubble fountains, bacteriology of, (35) 860.
- buffalo, *see* Carabao.
- capacity of soils, (26) 218, 619.
- channels in leaflets, structure and function, (28) 629.
- chemistry of, (26) 607.
- colloid-holding, purification by soils, (35) 388.
- colon-aerogenes group in, (38) 591.
- composition, (28) 316.
- composition and properties, (30) 620.
- conductivity, preparation, (36) 504.
- conduits, designing, (30) 887.
- conduits for, (34) 483.
- conservation—
by storage, treatise, (33) 885.
- in British Columbia, (38) 288.
- in New South Wales, (28) 785; (33) 583, 889; (34) 785.
- in soils, (29) 85.
- treatise, (31) 214.
- containing hypochlorite of lime, effect on vegetation, (29) 242.
- content of—
foods as affected by cooking, (26) 462.
- leaves, studies, (26) 627.
- soils, effect on development of wheat, (27) 38.
- continuous application to vegetables, (37) 325, 543.
- control, bibliography, (32) 588.
- control in irrigation, power, etc., book, (31) 383.
- conveyance, (28) 484.
- conveyance and diversion in India, (33) 683.
- conveyance, treatise, (33) 390, 586.
- core of apples, (26) 449.
- courses, lining, (27) 889.
- Cuban, analyses, (36) 511.
- culture experiments, (39) 122.
- culture experiments—
aeration of nutrient solution, (39) 28.
- distilling water for, (38) 26.
- interpretation, (36) 731.
- source of error in, (32) 128.
- culture, new method, (28) 817; (33) 628.
- culture solutions, studies, (38) 730.
- cultures, growth of plant seedlings in, (38) 329.
- decomposition by solar rays, (28) 416.
- detection by divining rod, (39) 17.
- determination—
calcium carbide method, (27) 408.
- in beet seeds, (27) 615.
- bread, (36) 506.
- butter, (26) 806; (27) 311, 312; (28) 474; (30) 113; (32) 508.
- calcium nitrate, (26) 606.
- canned tomatoes, (27) 310.
- cereals, (27) 713.
- cheese, (27) 811; (28) 612; (29) 311, 810; (31) 613, 811.
- corn, (30) 506.
- desiccated milk, (37) 508.
- flour, (27) 498.
- flour and meal, (36) 506.
- food materials, (40) 204.
- foods, (27) 498; (29) 799; (30) 505.
- lard, (26) 207.
- milk fat, (31) 508.
- plant substances, (30) 507; (36) 713.
- sirups, (34) 611.
- soap, (39) 716.
- soils, (28) 204; (32) 216; (33) 206; (36) 719.
- spices and similar products, (37) 414.
- sugar and molasses, (29) 800.
- sugar factory products, (38) 616.
- of hardness, (27) 9, 111; (38) 112.
- of zinc in, (39) 205.
- direct transfer of in ruminants, (29) 66.
- disinfection, (36) 886.

Water—Continued.

disinfection by—

bleaching powder, (38) 592.

bleaching powder and liquid chlorin, (34) 885.

chlorid of lime, (28) 214.

displacement—

n soils, apparatus for measuring, (33) 420.

of plant nutrients by, (27) 525; (29) 218.

distillation for water culture experiments, (38) 26.

distilled—

carbonation, (39) 804.

effect on lupines, (30) 825.

effect on plants, (31) 730; (32) 627; (34) 825.

toxicity, (34) 827.

distilling apparatus, (39) 804.

distribution in butter, (30) 877.

dog or western newt, rôle in mosquito control, (39) 660.

drainage, investigations, (26) 619.

drainage, loss of fertilizer constituents in, (27) 519.

drinking—

analyses, (32) 357, 456.

as source of disease, (38) 298.

chemistry of, (33) 683.

course of in stomach and intestine of horses, (30) 673.

effect on body temperature, (26) 466.

effect on digestibility of solid substances, (33) 462.

effect on digestion in horses, (29) 672.

examination, (28) 509.

examination and judgment, (30) 714.

filtration, (33) 883.

heating for cows, (28) 175.

judging, (33) 90.

methods of examination, (36) 362.

microscopy, (32) 205.

need of careful regulation, (30) 169.

passage through the stomach, (31) 468.

purification, (37) 488.

sterilization, (39) 80; (40) 414.

studies, (26) 360, 566; (27) 168, 465; (29) 267; (30) 765, 766, 866; (32) 663; (34) 763, 862; (40) 766.

duty of, (28) 484, 889; (29) 138, 180, 621; (31) 587; (34) 282.

duty of—

in Idaho, (26) 27.

in irrigation, (29) 588; (30) 687; (34) 883; (35) 82; (37) 185, 281; (38) 186.

in orchard irrigation, (31) 782.

investigations, (33) 553.

meaning, (27) 788.

economy of dry-land crops, (27) 531.

economy of the earth, (32) 84.

effect on—

beet pulp, (27) 210.

composition of wheat, (37) 38.

crop yields, (30) 135.

denitrification in soils, (29) 817.

development of grass and forage plants, (31) 524.

digestion of solid substances, (31) 264.

digestive efficiency of saliva, (29) 267.

gastric secretion, (26) 466.

germination of pine seeds, (27) 243.

lead, (31) 512; (33) 778.

nitrogen changes in soils, (36) 513.

root development of cereals, (30) 136.

soil bacteria, (35) 814.

strength of concrete, (29) 487; (37) 490.

sugar beets, (27) 837.

yield in pot experiments, (29) 514.

zinc pipes, (31) 189.

elevator, automatic, description, (31) 292.

elimination during normal respiration, (32) 764.

elimination from skin and respiratory passages, (37) 267.

elm, culture for wild ducks, (33) 251.

evaporation, (28) 219.

evaporation—

by corn, (29) 525.

formula, (37) 882.

from soils, (30) 321; (32) 815; (36) 421.

tests, equipment for, (29) 814.

examination, (26) 69, 660.

Water—Continued.

examination, treatise, (29) 506; (34) 609; (38) 11, 313.

excess, detection in chopped meat, (29) 460.

excretion in the breath, (28) 168, 666.

filters, notes, (29) 815; (30) 620.

filtration and purification, (31) 383.

finder, automatic, (31) 813.

finder, automatic, tests, (35) 286.

flood, storage for irrigation, (30) 688.

flow—

formulas and tables for, (35) 490.

in artificial channels, (29) 181.

drainage canals, (36) 585.

irrigation channels, (33) 183; (35) 185.

lined canals, (36) 282.

metal flumes, (36) 682.

open channels, (36) 184, 783.

open channels, formula for, (33) 777.

open channels, measuring, (32) 588.

pipes, (29) 891; (30) 786; (36) 681, 783.

wood-stave pipes, (36) 281.

into open wells, (36) 87.

over sharp-edged notches and weirs, (35) 886.

over weirs, (33) 484; (36) 282.

through orifices and tubes, (36) 488.

through submerged rectangular orifices, (37) 281.

through v-notch weirs, (37) 693.

flowing, measurement, (35) 786.

for agricultural and technical purposes, (28) 416.

for drinking and cooking purposes on ships, (32) 64.

for livestock and irrigation, (32) 883.

forcing plants with, (28) 837.

from deep wells, bacteria in, (38) 488.

from sphagnum bogs, (35) 579.

from sphagnum bogs, toxicity, (36) 320.

gas tar as a coating for concrete, (34) 889.

gas tar distillates as wood preservatives, (27) 314.

glass as an egg preservative, (28) 359; (29) 875.

grass hay, analyses, (27) 570.

grass hay, nutritive value, (27) 569.

ground—

and wells, textbook, (30) 620.

bibliography, (40) 785.

chlorin content, (31) 813.

factors affecting level, (30) 211.

for irrigation in Morgan Hill area, (36) 885.

in Australia, (39) 86.

Connecticut, (33) 387.

Hamburg, (32) 122.

LaSalle and McMullen counties, Texas, (34) 786.

New Mexico, (40) 785.

Quincy Valley, (40) 484.

Reese River Basin region, (40) 484.

Rio Grande and Socorro Valleys, (38) 690.

southeastern Nevada, (36) 485.

valley of southern California, (32) 587.

movements, (30) 289; (40) 187.

near Cairo, Egypt, (32) 123.

near Enid, Oklahoma, (32) 383.

near Oklahoma City, Oklahoma, (32) 384.

observations on level, (27) 317.

pollution of, (31) 216.

pumping for irrigation, (30) 385.

relation to forests, (29) 240.

relation to rainfall, (33) 322.

seepage and flow, (38) 288.

studies, (29) 137.

treatise, (32) 685.

use for irrigation, (35) 787; (37) 185.

growth of tree roots in, (30) 45.

hard—

disadvantages, (39) 292.

effect on bread, (26) 761.

softening, (39) 687.

taste of, (30) 714.

use for drinking, (27) 511, 512.

use in tea making, (29) 566.

hardness and color in relation to health, (34) 683.

hardness, determination, (31) 502; (35) 110, 805.

heat of absorption in wood, (29) 135.

heater for dairies, (32) 590.

Water—Continued.

hemlock—

- chemistry and toxicology, (34) 185.
- description, (32) 474.
- fatal poisoning by, (33) 867.
- notes, (32) 778.
- poisoning by, (37) 96.
- stock poisoning by, (39) 787.
- toxicity, (29) 111; (30) 880.
- hot, as fungicide, (32) 447; (34) 243; (35) 352, 353.
- hot, as insecticide, (32) 447; (34) 50, 243; (40) 162.
- hot, effect on germination of seeds, (29) 740.
- hot, use against cotton anthracnose, (32) 543.
- household tests for, (31) 462.
- hyacinth as source of potash, (40) 347.
- hyacinth, eradication, (32) 85.
- hyacinth, fertilizing value, (39) 523.
- hygiene, handbook, (36) 586.
- hydroscopic, of soils, (26) 218.
- in animal organs, (29) 767.
- in meat products, (34) 365.
- ingestion—
 - after prolonged fast, influence of, (26) 360.
 - effect on allantoin output, (27) 168.
 - effect on fatty changes of liver in fasting rabbits, (30) 262.
 - effect on metabolism, (28) 866.
 - effect on protein metabolism, (32) 663.
- inspection in Argentina, (26) 762.
- inspection in California, (30) 558.

irrigation—

- alkali content, (36) 487.
- analyses, (34) 512.
- application, (37) 281.
- chart for calculating deliveries, (26) 788.
- composition and action, (28) 637.
- computing for sugar cane, (31) 383.
- concrete pipe for, (29) 485, 487.
- conservation, (30) 687; (37) 238.
- conservation and distribution, (30) 385.
- cost per acre, (29) 486.
- distribution, (29) 684; (32) 586; (36) 887; (37) 281, 883.
- diversion from Arizona streams, (31) 89.
- duty of, *see* Water, duty of.
- economical use, (34) 282 (37) 84.
- effect on soil bacteria, (37) 421.
- forecasting supply, (38) 416.
- from potassium chlorid works, (34) 328.
- from vicinity of industrial works, (33) 588.
- in upper Italy, (37) 586.
- measurement, (27) 686; (28) 83, 484; (33) 682, 886; (34) 388, 881; (35) 185, 286, 490, 684; (37) 282, 436, 586, 882, 883; (38) 186; (40) 785.
- measurement and distribution, (27) 585.
- measurement terms, (28) 186.
- measuring devices for, (32) 683.
- methods of applying, (28) 135.
- notes, (32) 883.
- of high Alps, analyses, (34) 85.
- of south coast of Porto Rico, (33) 121.
- of Utah, composition, (39) 792.
- overflow basins for, (29) 485.
- pumping, (32) 187; (37) 281.
- pumping costs, (38) 589.
- pumping with oil engines, (33) 688.
- seasonal duty of, (28) 889.
- storage, (27) 787; (30) 688.
- temperature as affecting citrus seedlings, (34) 235.
- textbook, (34) 481, 482.
- use, (40) 187, 386.
- use in Idaho, (35) 186.
- use of sulphuric acid in, (29) 330.
- wood pipe for, (32) 585.
- judging, (31) 502.
- judgment, (34) 389.
- leeches, transmission of rinderpest by, (33) 876.
- lemons, cold storage of, (32) 439.
- level—
 - as affected by pumping from shallow well, (38) 388.
 - effect on cultivated plants, (26) 620.
 - effect on root and shoot development in plants, (32) 330.
 - effect on yield of cotton, (31) 229, 230.
 - in Gangetic plain, (34) 586.
 - in wells, relation to rainfall, (34) 319.
 - near a tidal river, (40) 187.

Water—Continued.

level—continued.

- relation to barometric pressure, (39) 17.
- relation to rainfall and soil texture, (33) 806.
- variations, (35) 813.
- levels, adjacent, regulating, (33) 586.
- levels, method of determining, (26) 417.
- lily, banana, as a duck food, (30) 545.
- lime-softened, effect on enzyme action, (31) 204.
- loss—
 - from canals by seepage, (36) 585.
 - in irrigation systems, (31) 782.
 - of head in 90°-pipe bends, (35) 186.
 - of head in strainers, orifices, and sand, (35) 786.
 - through evaporation, percolation, and absorption, (30) 418.
- measurement, (30) 887; (40) 187, 188, 785.
- measurement—
 - and division, (27) 188.
 - for irrigation, (29) 683; (31) 782.
 - hook gage for, description, (36) 783.
- measuring—
 - devices, (33) 682.
 - devices, tests, (32) 683.
 - flow, bibliography, (40) 785.
- mechanically filtered, characteristics, (34) 483.
- metabolic, production and rôle, (27) 201.
- meteoric, of antarctic region, studies, (30) 818.
- meter, Dethridge, description, (34) 682.
- meter, Venturi, abnormal coefficients of, (35) 886.
- meters, rating, (30) 386.
- meters, tests, (32) 684.
- methods of analysis, (29) 408, 412, 797; (30) 13; (31) 502, 785, 806; (37) 187, 311, 714.
- methods of examination, (35) 287; (36) 15; (39) 13.
- methods of sampling, (29) 814.
- microorganisms in, (26) 372.
- mineral—
 - analyses, (26) 515, 614; (29) 866; (31) 316; (38) 690.
 - and potable, analyses, (34) 683; (39) 493.
 - content as affecting canned goods, (34) 67.
 - of Illinois, classification, (29) 617.
 - of Iowa, (28) 316.
- moor, destruction of concrete by, (31) 290.
- movement in—
 - aerated soils, (38) 321.
 - gumbo soils, (36) 210.
 - irrigated soils, (27) 819.
 - leaves, (28) 822.
 - peat, (33) 322.
 - plants, (30) 202; (32) 221; (35) 432.
 - soils, (26) 619; (27) 500; (28) 219, 622; (29) 620; (34) 215; (37) 116, 623, 808.
- mud-laden, use in drilling wells, (34) 884.
- needs of body in relation to salivary glands, (40) 767.
- nitrite content, (26) 407.
- nitrogen content, relation to plant growth, (39) 332.
- nitrogen-fixing bacteria in, (38) 419.
- of Argentina, analyses, (37) 693.
- Egypt, papers on, (28) 416.
- Illinois, analyses, (29) 617.
- Neva drainage basin, (26) 621.
- New South Wales, analyses, (29) 785.
- Province of Buenos Aires, (35) 83.
- Quebec, analyses, (38) 84.
- Queensland, analyses, (35) 287.
- organisms, factors affecting growth, (32) 222.
- oxygenated, effect on germination of seeds, (36) 29.
- oxygen-consuming power, (38) 789.
- pathogenic organisms in, detection, (38) 188.
- percolation and retention in soils, (34) 216.
- percolation in soils, (34) 721.
- pipes, hot and cold, bursting, (37) 592.
- pipes, loss of head in, due to bend, (31) 384.
- polluted—
 - sterilization and utilization, (35) 288.
 - treatment, (35) 187.
- pollution—
 - and sanitary conditions of Potomac watershed, (35) 286.
 - control in Austria, (37) 528.
 - effect on fish, (29) 315; (30) 319.
 - sources of, (35) 787.
 - test for, (37) 587.

Water—Continued.

- potability, determination, (38) 890.
- potable—
 - analyses, (38) 690.
 - disinfection, (27) 512.
 - nitrites in, (36) 889.
 - phototransparency of, (28) 317.
 - removing taste due to algae, (38) 691.
 - sterilization, (26) 716.
- power—
 - at Great Falls, Potomac River, (29) 616.
 - cooperation in, (27) 888.
 - development, (36) 783.
- power, development—
 - in California, (29) 386.
 - in Oregon, (33) 888.
 - in Wisconsin, (29) 812.
 - law in Oregon, (31) 587.
- power—
 - engineering, treatise, (35) 786.
 - for farms and country homes, (26) 790.
 - in Alabama, (36) 885; (37) 84.
 - Cascade Range, (29) 84.
 - Crooked River basin, (35) 385.
 - North Carolina, (27) 15.
 - northern Indiana, (29) 616.
 - Queensland, (27) 686.
 - Silver Lake region, Oregon, (35) 285.
 - south-central Alaska, (34) 786.
 - the Alps, (31) 89.
 - Yakima River basin, (34) 884.
- laws in Nebraska, (30) 486.
- on farms, (34) 84.
- pipe lines for, (30) 188.
- project in Oregon, (36) 181.
- regulation and conservation in United States, (27) 188.
- resources in United States, (36) 484.
- State administration and control, (40) 688.
- wooden flumes for, (36) 586.
- problem in Ohio, (35) 83.
- public, laws in Idaho, (36) 384.
- pumping by windmills, (33) 391.
- purification, (29) 210, 315, 474; (30) 318, 620; (32) 87; (33) 176, 883; (36) 183; (37) 488, 588, 694, 787, 884; (38) 188, 288, 489; (40) 785.
- purification—
 - algae of submerged sand filters in, (36) 87.
 - and sewage disposal, treatise, (30) 511.
 - and use, treatise, (28) 514.
 - by aluminum sulphate, (35) 388.
 - chlorid of lime, (29) 512.
 - Infusoria, (27) 317.
 - liquid chlorin and hypochlorite of lime, (37) 588.
 - ultraviolet rays, (37) 588.
- colloids in, (31) 616.
- for household use, (29) 815.
- hypochlorite process, (32) 786.
- plants, treatise, (34) 390.
- progress in, (28) 317.
- treatise, (26) 28.
- with calcium hypochlorite, (36) 889.
- with copper sulphate, (39) 27.
- purifiers, ozone, description, (30) 789.
- purifying, (26) 214.
- radioactivity of, treatise, (33) 809.
- rain, *see* Rain.
- reduction of alkalinity due to filtration, (34) 483.
- relation to health, (40) 866.
- relation to potato late blight, (27) 544.
- relation to typhoid fever, (28) 258.
- removal of lead from, (34) 390.
- removal of microbes from, (33) 684.
- requirements of—
 - corn, (27) 432.
 - crops, (28) 321, 537; (30) 34; (32) 226; (34) 720.
 - crops in India, (27) 429.
 - grain sorghums, (32) 335.
 - infants, (29) 62.
 - oats, (32) 813.
 - Panicum spp., (32) 727.
 - plants, (26) 128; (29) 825; (31) 327, 729; (32) 127; (34) 306, 521, 522.
 - plants in glycerol solutions, (31) 625.
- reserves in plants, function, (32) 825.
- resources—
 - bibliography, (27) 116.
 - of California, (29) 386; (30) 599.

Water—Continued.

- resources—continued.
 - of Hawaii, (29) 511.
 - Minnesota, (26) 418, 811.
 - North Carolina coastal plain, (29) 722.
 - Oregon, (26) 214; (29) 486.
 - Penobscot River Basin, (27) 116.
 - south-central Washington, (29) 15.
 - Sulphur Spring Valley, Arizona, (30) 18.
 - Virginia coastal plain, (29) 511, 513.
 - western Australia, development, (30) 587.
- retaining in soils, (27) 619.
- retard of flow in irregular channels, (27) 386.
- review of investigations, (28) 214; (29) 811; (31) 716.
- rights—
 - bibliography, (32) 588.
 - law, treatise, (31) 586, 587.
 - laws in Idaho, (36) 384.
 - laws in Utah, (40) 483.
- rôle in—
 - dairy cow's ration, (38) 374.
 - macadam road construction, (30) 788.
 - plant growth, (27) 128, 330; (28) 420; (31) 221.
 - sugar hydrolysis, (30) 411.
- saline, in London Basin, (27) 16.
- Salton, bacteria in, (30) 431.
- Salton Sea—
 - analyses, (27) 508; (32) 511; (33) 19.
 - bacterial action, (33) 427.
 - effect on vegetable tissues, (33) 427.
 - studies, (29) 415; (33) 221.
- sanitation, treatise, (33) 258.
- sea, effect on plant distribution, (27) 527.
- seepage, of cranberry bogs, (31) 718.
- seepage, ownership and disposal, (33) 486.
- sewage, methods of analysis, (31) 502.
- sewage, utilization, (33) 486.
- soft, hygienic value, (27) 512.
- softening for kerosene emulsion, (27) 357.
- softening, zeolite process, (40) 588.
- soil, oxygen content, (27) 121.
- solids and organic matter in, (30) 620.
- soluble B—
 - formation in animal body, (36) 62.
 - in corn and wheat, (38) 869.
 - isolation and identification, (38) 503.
 - studies, (38) 612.
- sphagnum bog, toxicity, (37) 27.
- spring, radioactivity, (34) 332; (35) 187.
- spring tail, biology, (32) 552.
- sterilization—
 - by filtration, (31) 512.
 - by lime, (29) 814; (34) 286.
 - by Schumann rays, (34) 683.
 - by ultraviolet rays, (26) 28; (27) 317; (28) 214, 317, 416, 514; (29) 415; (30) 419, 816.
 - "excess lime" method, (28) 317.
- streptococci in, (36) 489.
- subsoil—
 - effect on cotton crop of India, (26) 417.
 - flow, (27) 20.
 - movement in Upper Egypt, (26) 27.
 - of United States, (27) 511; (28) 811.
- subterranean, treatise, (29) 15.
- supplies of Colorado, (27) 291.
- supplies, rural, pollution, (27) 512.
- supplies, rural, treatise, (40) 785.
- supply—
 - as affected by forests, (29) 842; (33) 587.
 - automatic, for dairy stock, (35) 189.
 - Bacillus coli communis in, (31) 718.
 - bacteriology and chemistry of, (34) 84.
 - bibliography, (33) 89, 882.
 - contamination, (30) 620.
 - effect on alfalfa, (31) 629.
 - for creameries, (29) 474.
 - for farms, (28) 188, 289, 487, 717, 789; (29) 210, 696, 722; (30) 89, 294, 690; (31) 291, 292; (32) 87, 190, 281, 487; (33) 289, 779, 784; (34) 83, 84, 185, 286, 586, 790; (35) 587, 787; (36) 86, 284, 390, 687, 891; (38) 188, 391.
 - for milk plants, (36) 774.
 - for rural schools, (37) 696.
 - forecasting, (29) 812; (34) 308.
 - ground, developing for private use, (34) 683.
 - hot, for private houses, (31) 189.
 - hypochlorite treatment, (33) 588.
 - in railway stations and trains, (32) 456.
 - in rural districts, (30) 390.

Water—Continued.

supply—continued.

in villages, manual, (38) 488.
 law in Oregon, (31) 587.
 lead poisoning through, (30) 418.
 monograph, (31) 416.
 moorland, filtration, (31) 512.
 mycology of, (30) 418.
 of Alaska, (31) 360.
 Australia, (31) 185.
 Big Smoky, Clayton, and Alkali Spring
 Valleys, Nevada, (37) 484.
 Big Smoky Valley, Nevada, (33) 778.
 Bombay, (35) 578.
 Boxelder and Tooele counties, Utah, (30)
 18.
 British Columbia, (30) 287.
 California, (26) 317; (28) 117, 317, 617, 618;
 (35) 82; (37) 486, 585.
 canning factories, (32) 64.
 cities, analyses, (28) 618.
 Coastal Plain of Georgia, (32) 784.
 Colorado River basin, (26) 27; (28) 116;
 (31) 118; (32) 279; (33) 89; (34) 683; (38) 84.
 Columbia River basin, (33) 484, 880.
 cranberry bogs, (39) 793.
 Denver, (37) 286.
 Deschutes River basin, (32) 279.
 District of Columbia, (29) 616.
 Dutch India, (31) 288.
 Fargo, North Dakota, (37) 488.
 Florida, (30) 17, 119.
 Great Basin, (28) 116, 618; (32) 587; (33)
 89; (35) 578; (38) 84.
 Hawaii, (31) 616; (34) 284; (38) 590, 890;
 (40) 291.
 Hawaiian rural districts, (37) 187.
 Hudson Bay and Upper Mississippi
 River Basin, (27) 116; (29) 511; (32) 382;
 (37) 84.
 Hudson Bay basins, (31) 512; (34) 284, 683.
 Illinois, (31) 813; (35) 284.
 Imperial Valley, Calif., (26) 482.
 Indiana, (27) 817; (32) 280, 487; (35) 83;
 (37) 883.
 Iowa, (28) 316; (33) 187.
 island of Antigua, (33) 881, 882.
 Jervois and adjacent counties, South
 Australia, (32) 486.
 Lodgepole Valley, (38) 187.
 lower Columbia River and Pacific drain-
 age basins in Oregon, (37) 384.
 lower Columbia River and Rogue, Ump-
 qua and Siletz rivers, (32) 587.
 lower Mississippi basin, (26) 418; (32) 383;
 (33) 89, 391; (35) 578; (36) 885; (38) 890.
 Marseille, (27) 16.
 Massachusetts, (34) 683; (36) 484.
 Mississippi River basin, (31) 512.
 Missouri River basin, (26) 418, 515; (31)
 117; (32) 279; (33) 89, 391; (37) 84; (38)
 789.
 Navajo and Hopi Indian reservations,
 (34) 284; (36) 485.
 New Mexico, (28) 618; (33) 288; (35)
 579; (37) 384; (38) 690.
 New South Wales, (29) 785.
 New York State, (31) 214.
 Niles cone and adjacent areas, Calif.,
 (33) 187.
 North Atlantic coast, (26) 27; (28) 317;
 (31) 511; (32) 381; (34) 483; (36) 184;
 (37) 585; (38) 890.
 North Pacific coast, (26) 27; (29) 511;
 (32) 587; (34) 884.
 northeastern Arkansas, (35) 579.
 Ohio, (35) 83.
 Ohio River basin, (28) 317; (30) 18; (31)
 511; (32) 382; (33) 187; (35) 387; (37) 585.
 Oregon, (32) 280; (33) 881; (34) 284; (35)
 489.
 Pacific basins in Washington and upper
 Columbia River basin, (36) 282, 582.
 Pacific coast in California, (28) 116; (32)
 587; (36) 484; (37) 84; (40) 785.
 Pacific slope basins in Washington, (33)
 484; (39) 793.
 pampas of Argentina, (36) 886.
 Paradise Valley, Arizona, (33) 484.

Water—Continued.

supply—continued.

of Pennsylvania, (34) 785.
 Philippines, (33) 587; (34) 389.
 Pit River basin, (35) 285.
 primitive people, (27) 617.
 Rio Grande basin, (33) 391.
 Rogue and Willamette river valleys, (36)
 282.
 rural and small urban areas, (35) 187.
 rural district of Atherstone, (32) 87.
 Russian Turkestan, (31) 812.
 Sabino Canyon, Ariz., (32) 586.
 Sacramento Valley, Calif., (33) 186.
 San Joaquin Valley, Calif., (35) 186.
 San Simon Valley, Arizona and New
 Mexico, (37) 485.
 Seward Peninsula, Alaska, (29) 210.
 Snake River basin, (33) 880; (35) 787; (36)
 86.
 South Atlantic and eastern Gulf of Mexico
 basins, (27) 116; (30) 17; (31) 118; (32)
 382; (34) 84; (36) 86; (38) 488.
 South Australia, (30) 211.
 southern California, (30) 688.
 southwestern Ohio, (28) 617.
 St. Lawrence River basin, (28) 116, 317;
 (31) 22; (32) 382; (33) 187; (35) 578; (38) 84,
 590.
 Sulphur Spring Valley, Ariz., (35) 83.
 Texas, (34) 284, 489.
 Tularosa basin, New Mexico, (32) 784.
 Tunis, (31) 287.
 United States, (40) 290, 291.
 United States, relation to food production
 and population, (26) 715.
 upper Columbia River basin, (39) 793.
 upper Mississippi River basin, (34) 284,
 683.
 upper Silverbow basin, (32) 383.
 Utah, (37) 791.
 Vermont, (38) 690.
 Victoria, (28) 683; (30) 887; (34) 682; (35)
 385; (36) 682.
 Washington, (31) 616.
 Waterbury area, Connecticut, (34) 683.
 Wayne County, Michigan, (31) 511.
 west Florida, (29) 315.
 Western Australia, (35) 489.
 western Gulf of Mexico basins, (26) 418;
 (29) 511; (31) 512; (33) 89, 391; (34) 389;
 (38) 84, 188.
 Wichita region, Kansas, (31) 88.
 Wisconsin, (35) 387.
 Yukon River, (32) 382.
 Yukon-Tanana region, Alaska, (33) 287.
 on railway trains, (30) 863.
 pipe lines for, (30) 188.
 predicting, (27) 415.
 profile surveys in Oregon, (34) 84, 284.
 profile surveys in Washington, (34) 84, 284.
 protection, (34) 790.
 relation to forests, (28) 842.
 relation to rainfall, (34) 510.
 relation to typhoid fever, (30) 319.
 small, treatise, (28) 214, 893.
 system, description, (35) 496.
 treatise, (31) 383, 511, 512; (32) 87; (33) 287,
 586; (34) 83; (37) 187.
 underground, development, (29) 512.
 wood pipe for, (36) 87.
 supplying continuously to plants, (37) 325, 543.
 surface, colon bacilli in, (36) 284.
 surface, for drinking purposes, (32) 786.
 surfaces, evaporation from, (26) 417, 614; (29)
 225; (30) 118, 713; (37) 785.
 survey of Illinois, (29) 617.
 system for farm homes, (40) 91, 789.
 system, pneumatic, notes, (30) 489.
 systems, notes, (31) 185.
 table fluctuations in northern Europe, (31) 316.
 tank and silo combined, construction, (30) 489.
 transpiration in leaves, (29) 217.
 transportation of agricultural products, (32) 391.
 transportation of debris by, (31) 888.
 treatise, (28) 27.
 troughs, open, spread of glanders by, (26) 782.
 turbidity, (37) 486.

- Water—Continued.
 underground—
 in Big Smoky Valley, Nevada, (33) 778.
 eastern Kansas, (32) 486.
 Queensland, (27) 686.
 South Australia, (30) 211.
 locating, (35) 286; (36) 886.
 locating with divining rods, (33) 882.
 location, (31) 813.
 notes, (28) 27.
 of Iowa, (28) 316.
 Luna Co., New Mexico, (32) 334.
 Mesilla Valley, New Mexico, (28) 889.
 north-central Texas, (29) 209.
 Oasis of Kharga, (26) 317.
 southeastern Texas coastal plain, (32) 384.
 Valley of Mexico, (26) 418.
 pollution through rock fissures, (30) 19.
 utilization in Egypt, (33) 188.
 use on irrigation projects, (40) 187.
 use on Yuma project, (40) 484.
 vapor, analysis, apparatus for, (40) 111.
 vapor on clear days, notes, (26) 118.
 vapor, retention by plants, (29) 524.
 viability of bacteria in, (38) 488.
 warm, forcing strawberries with, (31) 238.
 warm v. cold, for animals, (31) 367.
 waste, methods of analysis, (31) 502.
 waste, of mines, piggeries, etc., (33) 684.
 weed, composition and use, (27) 727.
 weed, culture for wild ducks, (33) 251.
 well, analyses, (27) 719.
 well, of western India, (35) 187.
 well, relation to public health, (29) 512.
 wheel for irrigation in Philippines, (36) 185.
 wheels, testing, (35) 889.
 witches, notes, (32) 487.
 zinc pipes for, (33) 188.
- Watercress—
 culture, (33) 438.
 culture for wild ducks, (33) 251.
 of polluted streams as a food, (32) 357.
 polluted, typhoid epidemic from, (30) 64.
- Waterfowl—
 at Swan Lake, Minnesota, (40) 55.
 breeding grounds, (39) 460.
 lead poisoning in, (39) 687.
 mortality around Great Salt Lake, (33) 251;
 (39) 460.
- Watering—
 devices for livestock, (27) 486; (30) 389.
 devices for moorland pastures, (33) 188.
 places for livestock, (31) 366.
- Watermelon—
 anthracnose, studies, (35) 652; (40) 250.
 blossom-end blight, notes, (30) 537.
 diseases and their treatment, (40) 52.
 diseases, notes, (37) 554.
 diseases, studies, (38) 645.
 leaf spot, notes, (35) 749.
 pink spot, notes, (34) 843.
 seeds, analyses and use, (36) 611.
 stem-end rot, investigations, (35) 248.
 wilt, relation to contaminated seed, (34) 53.
- Watermelons—
 acidity, (32) 110; (37) 715.
 critical period of growing season, (39) 811.
 culture experiments, (35) 341; (37) 742.
 culture in Indiana, (38) 241.
 fertilizer experiments, (37) 742, 832.
 reducing and nonreducing sugars in, (29) 503.
 sugar content, (27) 765.
 Thielavia basicola on roots of, (33) 852.
 varieties, (34) 232; (37) 143.
 water requirements, (32) 127.
- Waters—
 of Colorado, alkalis in, (39) 323.
 New Mexico, analyses, (40) 785.
 Queensland, analyses, (40) 314.
 Quincy Valley, analyses, (40) 485.
 South Dakota, analyses, (40) 291.
 Utah, analyses, (39) 792.
- Watersheds, protection in Hawaii, (33) 442.
- Waterspouts—
 at Tatoosh Island, Washington, (38) 812.
 notes, (32) 211.
 off Cape San Lucas, (34) 614.
- Waterway areas, determination, (31) 384.
- Waterways—
 artificial, frictional resistance in, (30) 885.
 papers on, (29) 291.
- Waterworks—
 construction and management, (40) 715.
 design and construction, (29) 182.
 handbook, (36) 87.
- Wattle—
 bagworm, notes, (29) 758.
 black, anatomy and distribution of tannin in,
 (33) 523.
 disease in fowls, (31) 782.
 diseases, studies, (29) 45.
 insect, investigations, (33) 856.
 tanbark industry in Natal, (37) 748.
- Wattles of Australia, description, (36) 844.
- Waw-waw meal, analyses, (40) 173.
- Wax—
 candelilla, chemistry of, (26) 611.
 carnauba, methods of analysis, (28) 511.
 from sugar cane, (39) 712.
 Grecian, analyses, (30) 258.
 moth, life history, (26) 349.
 moth, life history and remedies, (32) 151.
 moth, notes, (28) 352.
 moth parasite, studies, (40) 359.
 moths, destruction by cold, (40) 760.
 statistics in United States, (28) 390.
 sugar-cane, notes, (26) 213.
 utilization, (35) 470.
 wastes, fertilizing value, (29) 129.
 worm, fumigation, (40) 755.
- Waxes—
 analyses, (35) 203.
 chemical technology of, (29) 413.
 chemistry of, (31) 201.
 determination of unsaponifiable matter in, (37)
 805.
 handbook, (40) 804.
 melting point, determination, (36) 15.
 methods of analysis, (27) 205; (31) 806; (35) 205.
 of Dutch East Indies, (30) 697.
 technical handbook, (39) 8.
 technology and analysis, treatise, (34) 507.
 treatise, (30) 310.
- Weasels, susceptibility to plague, (26) 59.
- Weather—see also Meteorological observations and
 Meteorology.
 abnormalities at Springfield, Missouri, (26) 614.
 and climate, treatise, (28) 211.
 health, (33) 321.
 radiotransmission, (31) 615.
 radium emanation at Manila, (33) 717.
 sunspots, correlation, (27) 718.
 wheat yield in the Dakotas, (39) 210.
 as affected by the moon, (29) 314; (33) 320.
 as factor in dissemination of plant diseases, (38)
 47.
 at Fresno, Calif., (29) 121.
 at Los Angeles, Calif., (27) 414.
 at Point Reyes, (29) 812.
- Bureau—
 agricultural meteorology of, (33) 615.
 and the physician, (34) 509.
 and the war, (38) 210.
 Chinese, (35) 618.
 Division of Agricultural Meteorology, (34)
 601.
 exhibit at San Francisco, (34) 413.
 history and work of, (33) 717.
 instructions for cooperative observers, (33)
 118.
 instructions to observers, (34) 509.
 observers in Utah, (27) 316.
 relation to cranberry industry, (27) 539.
 report of chief, (27) 509; (29) 209; (31) 212;
 (32) 810; (35) 506; (36) 615; (38) 617.
 service, extension of, (36) 19.
 service in California, (32) 509.
 terms used to designate storms, (34) 118.
 weekly forecasts by, (33) 100.
 cause of, (32) 25.
 changes as indicated by halos, (34) 207.
 charts, daily, of northern and southern hemi-
 spheres, (31) 213.
 continuous pictures of, (31) 615.
 cycle, notes, (26) 416.
 daily, graphical method of showing, (36) 19.

Weather—Continued.

effect on—

- absorption of fertilizers by plants, (36) 510.
- crop production, (35) 496.
- crop yields, (34) 415.
- development and yield of millet, (38) 15.
- germination of seeds, (38) 15.
- grape *Peronospora*, (27) 547.
- growth and maturity of soy beans, (29) 616.
- honey production, (37) 854.
- mineral content of feeding stuffs, (33) 870.
- nitric and nitrous acids in rain, (34) 118.
- nitrogen in rainfall and atmosphere, (38) 509.
- oats, (27) 641.
- plant diseases, (27) 848.
- quality of field crops, (26) 415.
- radium emanations in the air, (33) 211.
- soils, (31) 214.
- wheat yield in India, (40) 716.
- yield of corn, (31) 213, 229; (39) 418.
- yield of potatoes, (33) 716.

fallacies, notes, (31) 811.

- forecasting, (27) 413; (29) 120; (30) 510, 712, 713; (31) 19; (32) 210; (35) 505, 808; (36) 19, 811; (37) 417, 619, 716; (40) 416.

forecasting—

- bibliography, (32) 316.
- minimum temperatures, (38) 209.
- treatise, (26) 513, 809; (29) 615.

forecasts—

- by laymen, (34) 414.
- distribution by amateur wireless operators, (35) 506.
- for fruit growers, (27) 509.
- in England, (27) 510.
- in forest fire prevention, (31) 213; (38) 317.
- in Great Britain, (28) 116.
- long-time, in Russia, (27) 212.

handbook, (26) 513; (27) 509; (34) 413.

in Argentina, (37) 116.

British Isles, (27) 316; (35) 318.

California, (27) 316.

Florida, (27) 616.

Germany in 1912, (28) 617.

Iowa, (38) 416.

Iowa in 1915, (36) 207.

Ohio, (31) 615.

San Joaquin Valley, (26) 214; (27) 115.

indexes, preparation, (40) 716.

insurance, (36) 418.

manual, (27) 212.

map, daily, for southern Hemisphere, (31) 615.

map, new, (31) 213.

map, treatise, (36) 509.

maps, notes, (29) 414.

misconceptions concerning, (33) 210.

observers, cooperative, instructions for, (33) 118.

of Alberta, (29) 15, 85.

Australia, (32) 118.

British Isles, (31) 214; (32) 419.

Chicago, (32) 211.

England and Wales, 1917, (40) 211.

Hertfordshire, (34) 320.

Iowa, (33) 508.

Kansas, common fallacies, (40) 210.

north Atlantic in August, 1914, (34) 118.

Ohio, (32) 717; (34) 118.

Pennsylvania in 1682, (34) 414.

Salt Lake City, (38) 319.

San Diego, Calif., (31) 21.

Saskatchewan, (29) 85.

Scotland, (35) 719.

Scotland in 1913, (31) 316.

United States, (32) 810; (33) 807.

Upper San Joaquin watershed, (29) 812; (30) 713.

phenomena, medieval, (32) 418.

phenomena, notes, (30) 416.

proverbs, (29) 414.

relation to—

- agricultural instruction, (26) 94; (28) 414.
- cotton ginned during certain period, (37) 114.
- cotton production in Texas, (33) 117.
- crop diseases in Texas, (40) 154.
- crop growth, (28) 115.
- crop production, (38) 208.
- crops, (37) 209.
- daily transpiration, (36) 225.

Weather—Continued.

relation to—continued.

- evaporation from soils and plants, (28) 212.
- farming, (35) 617, 618.
- halos, (39) 511.
- moon, (27) 509; (32) 316; (34) 509.
- ox warbles, (26) 657.
- plant diseases, (31) 745.
- potato diseases, (26) 53.
- radioactive emanations, (40) 314.
- soil formation, (34) 514.
- sun spots, (38) 114.
- wheat stalk disease, (30) 541.
- wheat yield, (38) 509.

Review, changes in, (31) 212.

review of investigations, (28) 214; (29) 811; (31) 716.

sayings, Arabic, (34) 413.

service in Asiatic Russia, (31) 615.

studies, (35) 808.

treatise, (31) 19.

types of in United States, (30) 814.

v. coal mine disasters, (32) 25.

warnings, fire, (35) 419.

wet and dry, persistence, (36) 18.

Weathering, effect on soil bacteria, (29) 221.

Weaver birds of Sudan, (26) 855.

Weazels, relation to Rocky Mountain spotted fever, (27) 479.

Webbia dipterocarpi n.g. and n.sp., description, (32) 658.

Weber, H. A., biographical sketch, (27) 398.

Websteriana costalis n.g. and n.sp., description, (35) 259.

Webworm—

fall—

- notes, (26) 753; (28) 155; (38) 256, 358, 762; (39) 761; (40) 259.
- on pecan, (38) 157; (39) 557.
- parasites, (27) 261.
- remedies, (28) 659.

garden—

- notes, (29) 252.
- on alfalfa, (39) 865.
- remedies, (26) 250.

Webworms, notes, (29) 252.

Weed—

ashes, effect on tobacco soils, (36) 513.

cutters, tests, (29) 186.

diseases, notes, (36) 348.

killers, manual, (29) 341.

law in Canada, (39) 744.

law in Iowa, (31) 139.

seeds—see also Seeds.

buried, (39) 239; (40) 638.

descriptions and classifications, (40) 39.

in Canadian red clover seed, (40) 627.

feeding stuffs, (40) 637.

grass and clover, (40) 833.

the soil, (40) 339.

notes, (40) 443.

protein content and microchemical tests, (40) 832.

survival, (40) 738.

Weeder harrow for dry farming, (26) 95.

Weeds—

alien, in Australia, (39) 842.

analyses and feeding value, (33) 70.

as affected by methods of husbandry, (33) 734.

as source of potash, (37) 817.

classification, (35) 835.

collections for schools, (31) 599.

composition, (34) 39.

control, (39) 443, 744, 834.

description, (37) 239.

description and eradication, (28) 836.

destruction—

in lawns, (30) 146.

in rice fields, (26) 42.

in wheat fields, (30) 441; (36) 534.

with kainit, (29) 215; (35) 340.

plumber's blowlamp, (32) 139; (33) 684.

sodium arsenite, (32) 730, 741.

sprays, (26) 434; (32) 630.

sulphate of ammonia, (29) 530.

sulphuric acid, (33) 139.

dissemination, (29) 637.

dissemination of fungi by, (28) 442.

distribution by bullfinches, (28) 451.

Weeds—Continued.

- distribution in northwestern United States and Canada, (26) 334.
 - effect on—
 - cereal crops, (38) 734.
 - nitric nitrogen accumulation in soils, (38) 814.
 - roots of young forest trees, (33) 645.
 - ensiling, (29) 741.
 - eradication, (26) 235, 333, 538, 839; (27) 343; (28) 836, 838; (29) 433, 637, 736, 748; (30) 826, 837; (31) 38, 43, 139, 438, 532, 633, 738, 836; (32) 138, 793; (33) 139, 734; (34) 228, 736; (35) 835, 899; (36) 236, 339; (37) 226, 446, 532, 895; (38) 141, 632; (40) 328, 429, 536, 622, 638, 833.
 - eradication from irrigation canals, (37) 285.
 - fertilizer experiments, (31) 133.
 - fertilizing value, (29) 320.
 - germination and growth in shade, (31) 235.
 - growth as related to mineral soils in Denmark, (40) 832.
 - identification, (29) 637; (36) 541; (40) 833.
 - in Buzuluk Experiment Field, (33) 437.
 - New Zealand, (38) 743.
 - poppy fields of Volhynia and Podolia, (35) 444.
 - Union of South Africa, (34) 241.
 - introduced into Imperial Valley, Calif., (31) 36.
 - lessons on, (31) 394.
 - manual, (32) 232.
 - method for study, (37) 542.
 - notes, (28) 148; (30) 632; (31) 438; (36) 534.
 - occurrence of barium in, (26) 432.
 - of arable lands, (29) 30; (30) 399.
 - Argentine wheat fields, (40) 637.
 - barley fields of European Russia, (32) 833.
 - Canada, notes, (27) 643.
 - Cherson government, Russia, (26) 135.
 - cultivated soils in Germany, (29) 337.
 - grassland, English, (39) 439.
 - Idaho, (26) 538.
 - Indiana, treatise, (29) 144.
 - Iowa, Minnesota, and Wisconsin, (35) 35.
 - Kentucky, (32) 337.
 - Kherson, Russia, (37) 542.
 - Maryland, (26) 333.
 - Michigan, (27) 343; (36) 739.
 - Minnesota, (40) 339.
 - Montana, (35) 835.
 - North Carolina, eradication and control, (38) 141.
 - Novgorod, (37) 239.
 - Ontario, (27) 733.
 - Sind, (39) 541.
 - Switzerland, (38) 350.
 - western Pennsylvania, (40) 536.
 - Wisconsin, report on, (26) 538.
 - on cultivated land in India, (39) 229.
 - on cultivated marsh soils, (26) 538.
 - parasitic, description, (26) 739.
 - peculiarities and distribution, (26) 739.
 - preservation for school work, (31) 394.
 - propagation, (26) 739.
 - relation to—
 - cultivation of corn, (28) 233.
 - drought, (31) 515.
 - soil fertility, (34) 39.
 - soils, (27) 29, 417; (29) 523.
 - root systems, (37) 542.
 - study in schools, (26) 333; (35) 593.
 - treatise, (31) 835.
 - useful, (40) 832.
 - utilization by lambs, (38) 672.
 - varieties, (31) 133.
 - water requirements, (29) 826.
- Weevil—
- larvae, dung-bearing, notes, (34) 556.
 - New York, studies, (40) 861.
 - stalk borer, bird enemies of, (34) 849.
- Weevils—
- and weevil products, use in food and medicine, (34) 361.
 - attraction by water, (40) 855.
 - habits of, (35) 261.
 - in beans and peas, remedies, (38) 41.
 - in stored grain, (39) 558.
 - in stored grain, remedies, (33) 34.
 - injurious—
 - in Great Britain, (38) 364.
 - to fruit buds, (35) 363.

Weevils—Continued.

- injurious—continued.
 - to potatoes and yams, (38) 864.
 - to wheat, (26) 352.
 - of northeastern America, treatise, (36) 157.
 - studies, (37) 58.
- Weights—
- and measures—
 - inspection, (29) 266.
 - inspection in Maine, (36) 467.
 - inspection in Nevada, (33) 661.
 - law in Iowa, (26) 261.
 - law in Nebraska, (31) 67.
 - law in Nevada, (30) 165.
 - law in Ohio, (33) 261, 662.
 - conversion into metric system, (30) 697.
- Weir formulas, derivation, (36) 282.
- Weir notches, flow of water through, (34) 88.
- Weirs—
- chart for, (31) 888.
 - Cippoletti, end contractions in, (31) 782.
 - construction and use, (37) 882.
 - discussion and use, (32) 684.
 - flow of water over, (33) 484; (35) 886; (37) 693.
 - inverted, notes, (33) 238.
 - irrigation, description, (34) 388.
 - notes, (31) 383.
 - portable, construction, (37) 486.
 - proportional flow, notes, (31) 784.
 - proportional flow, tests, (34) 785.
 - steel, adjusting length of crest, (29) 684.
 - tests, (35) 356; (37) 586.
 - treatise, (35) 288.
 - use, (33) 885.
- Well casings, corrosion, (34) 483.
- Well equipment, notes, (30) 385.
- Wells—
- and ground water, textbook, (30) 620.
 - artesian, of Australia, (39) 86.
 - boring, (34) 683.
 - boring in New South Wales, (29) 785.
 - breathing, (34) 614; (35) 115.
 - convoluted tube, for irrigation, (29) 485.
 - deep, bacteria in, (38) 488.
 - drilling, use of mud-laden water in, (34) 884.
 - flow of water into, (36) 87.
 - for irrigation, drilling, (32) 882.
 - in Imperial Valley, (35) 82.
 - of South Dakota, (40) 291.
 - of United States, (28) 811.
 - protection, (34) 790.
 - pumping from, (40) 188.
 - relation to public health, (29) 512.
 - shallow—
 - concrete caisson curb for, (29) 484.
 - developing, (32) 586.
 - in Illinois, (28) 717.
 - of Indiana, (29) 16.
 - protection, (31) 813.
 - use in land drainage, (34) 885.
- Wenatchee River Basin, Washinton, hydrography, (32) 786.
- Wesmaelia spp. in America, (37) 855.
- West Indies Department of Agriculture, notes, (26) 693.
- West Virginia—
- Station, bulletin, (30) 94; (32) 899; (34) 197.
 - Station, notes, (26) 194, 398, 696; (27) 199; (28) 398; (29) 600; (30) 300, 798; (31) 198; (32) 95, 498; (33) 400; (34) 98; (35) 98, 500; (36) 697; (37) 198.
 - Station, publications, (36) 294; (40) 494.
 - Station, report, (30) 94; (32) 796; (39) 196.
 - University, notes, (26) 194, 696; (27) 199; (28) 398; (29) 197, 600; (30) 300, 798; (31) 198, 400, 799; (32) 95; (33) 400; (34) 98; (35) 98, 500, 500; (36) 697; (37) 198.
- Western—
- Australian Farm School, (31) 500.
 - Canada Irrigation Association, (31) 88; (33) 780.
 - pine beetle, notes, (26) 561; (32) 552.
 - twig borer, notes, (30) 255.
- Western-wolths grass, culture experiments, (36) 735.
- Wethers—
- cost of fattening, (29) 572.
 - feeding experiments, (26) 468.
 - metabolism experiments, (26) 469.
- Whale—
- guano, analyses, (32) 32.
 - meal, analyses and digestibility, (26) 567.

Whale—Continued.

- meat, fertilizer from, (39) 524.
- oil, hydrogenated, properties of, (34) 9.
- oil industry, statistics, (39) 9.

Wheat—

- Alaska and Stoner, or "Miracle," (35) 139.
- amylase, studies, (31) 609.
- analyses, (26) 43, 767, 873; (27) 461; (28) 463, 666; (29) 271; (30) 434, 565; (31) 65, 334, 431, 863, 864; (32) 252, 760, 862; (33) 160, 161, 568; (34) 760; (35) 8, 162, 367; (37) 38, 39.
- and barley hybrid, (34) 339; (37) 823.
- clover following various crops, (40) 829.
- grain mixtures, nutritive deficiencies, (35) 577.
- its milling products, composition, (30) 257.
- its products, treatise, (38) 538.
- pea silage, acidity, (39) 878.
- peas as hay crop, (39) 333.
- rye, fertile hybrid of, (30) 341.
- rye hybrid, description, (38) 735.
- rye hybrid, heredity in, (37) 432.
- rye, hybrids, natural, (34) 230.
- spelt, hybridization, (38) 636; (40) 524.
- anomaly of anthers, (40) 39.
- antineuritic vitamins in, (38) 581.
- aphis, western, studies, (35) 757.
- as affected by—
 - age, (27) 363.
 - alkali, (39) 736; (40) 315, 719.
 - asparagin, (27) 731.
 - barium, (40) 515.
 - barium and strontium, (40) 819.
 - boron, (38) 22; (39) 429.
 - calcium and magnesium, (35) 726.
 - companion crop, (32) 432.
 - copper and lead salts, (35) 324.
 - disinfectants, (26) 820.
 - greenhouse temperature, (37) 533.
 - guanidin, (28) 427.
 - lithium, zinc, and lead salts, (29) 520.
 - magnesia, (39) 117.
 - manganese, (40) 820.
 - metallic salts, (31) 218.
 - osmotic pressure of soil solution, (37) 128.
 - planting out of season, (31) 234.
 - potassium chlorid, (40) 244.
 - radioactive minerals, (27) 826.
 - radioactivity, (30) 224.
 - salt solutions, (39) 840.
 - sodium compounds, (39) 117.
 - sodium nitrate, (38) 438; (40) 244.
 - soil and climate, (39) 342.
 - soil moisture, (32) 814; (37) 340; (39) 841.
 - soil nitrogen, (39) 342.
 - soil volume and available plant food, (31) 132.
 - spacing in breeding plats, (30) 633.
 - sulphur, (38) 221.
 - sulphuric acid, (31) 34.
 - temperature, (30) 664.
 - weight of seed, (39) 743.
- as dry-farm crop, (39) 131, 736, 744.
- green manure, (38) 27.
- hog pasture, (39) 375.
- nurse crop for alfalfa, (32) 430.
- silage crop, (39) 134; (40) 730.
- sole ration for animals, (33) 367; (36) 865; (39) 72.
- ash analyses, (29) 861.
- assimilation and utilization of plant food, (39) 127.
- Australian—
 - culture in England, (26) 135.
 - government marketing, (40) 592.
 - milling and baking qualities, (32) 659; (40) 66.
- availability of nitrogen in, (26) 124.
- bacterial blight, notes, (35) 845.
- bacterial disease in Punjab, (39) 454.
- bacterial disease, notes, (29) 423; (31) 127.
- baking quality as affected by—
 - climate, (31) 43.
 - storage, (30) 667.
- baking tests, (26) 67.
- beardless and bearded, prices of, (26) 43.
- behavior of organic substances in, (39) 526.
- belt, climatic and edaphic factors, (39) 734.
- belts, winter and spring, climatic features, (40) 117.

Wheat—Continued.

- black foot disease, notes, (27) 748.
- black stem rust, notes, (39) 851.
- botanical notes, (30) 240.
- bran—
 - amino acid in, (33) 665.
 - analyses, (26) 72, 210, 266, 267, 363, 468, 568, 768, 770, 873; (27) 170, 469, 570, 670, 774, 872; (28) 265, 364, 464, 465, 572, 669; (29) 270, 367, 467, 666, 769; (30) 67, 68, 169, 565, 868; (31) 366, 467, 564, 569, 663, 863; (32) 169, 259, 667, 862; (33) 371, 568, 870; (34) 72, 169, 263, 371, 467, 566, 665, 767; (35) 373, 562, 867; (36) 167, 268, 667, 765; (37) 268, 471, 767; (38) 67, 368, 369, 572; (39) 167, 270, 370, 773; (40) 72, 470, 571, 665.
 - chemistry of, (28) 17.
 - composition and adulteration, (38) 712.
 - determination of indigestible residue, (39) 502.
 - determination of smut spores in, (27) 310.
 - digestibility, (37) 678.
 - digestible nutrients, (28) 171.
 - distribution of nitrogen in, (36) 269.
 - energy value, (33) 72.
 - extract, effect on growth of rats, (34) 258.
 - feeding value, (39) 733, 784; (40) 670, 672.
 - fertilizing value, (39) 726.
 - for steers, (29) 272.
 - in animal nutrition, (31) 762.
 - inosite phosphoric acids of, (39) 14.
 - organic phosphorus compounds of, (28) 505; (32) 17; (33) 11, 464, 802.
 - phosphorus compounds in, (29) 804.
 - phytic acid in, (30) 707.
 - value in food, (28) 258.
- bread as affected by organic acids, (27) 462.
- bread, recipes, (37) 364.
- bread, use of potato flour in, (26) 156.
- bread-making—
 - for warm climates, breeding experiments, (40) 143.
 - qualities, (39) 469.
 - quality as affected by artificial drying, (31) 162.
- breeding, (26) 434; (29) 538; (31) 234, 829; (36) 441; (37) 799, 827; (40) 38, 523.
- breeding—
 - and improvement in Sweden, (39) 833.
 - experimental error in, (29) 38; (39) 830.
 - experiments, (26) 639; (27) 437; (28) 828; (29) 31, 33, 143, 532, 835; (30) 331, 441, 525; (31) 531, 831; (32) 532; (33) 331; (35) 825; (36) 828; (37) 731; (38) 526; (39) 126, 129, 334, 634, 642, 643, 736; (40) 140, 143, 233, 330, 524, 525, 635, 636, 830.
 - for disease resistance, (28) 147.
 - drought resistance, (28) 537.
 - milling quality, (28) 633.
 - rust resistance, (39) 550.
 - variation in nitrogen content, (29) 835.
 - selection in, (30) 733.
- bug, notes, (30) 854.
- bulb fly, biology, (35) 460.
- bulb fly, notes, (27) 552; (31) 57; (32) 350; (40) 547.
- bulk handling in Washington, (39) 643.
- bunt—see also Wheat smut, stinking.
 - notes, (32) 544.
 - treatment, (26) 845.
 - wind dissemination, (40) 642.
- burned, milling and baking tests, (38) 567.
- bushel weights, (37) 889.
- by-products, analyses, (26) 568, 665; (27) 670; (28) 265, 364, 464; (29) 769.
- by-products, ash analyses, (29) 861.
- by-products, judging, (31) 809.
- catalytic fertilizers for, (30) 627.
- chafer, notes, (31) 155.
- chaff, analyses, (29) 467.
- chaff, digestibility, (31) 667.
- change in weight during storage, (30) 639; (31) 257.
- changes in proportions of hard and soft kernels, (40) 142.
- chop, analyses, (31) 863.
- chromosome numbers in, (27) 636.
- classification, (39) 539.

Wheat—Continued.

classification—

and descriptions, (33) 436.

and grading, (37) 860.

studies, (31) 327.

committee of India, (40) 894.

comparative anatomy, (38) 741.

competition in, (27) 430.

composition, (26) 358; (29) 262; (31) 759; (33) 564.

composition and nutritive value, (27) 267.

composition as affected by—

environment, (26) 133; (29) 263; (30) 440, (32) 431.

fertilization and soil preparation, (34) 230.

fertilizers, (28) 140, 535; (40) 434.

irrigation, (28) 332.

maturity, (28) 836.

composition—

at different stages, (30) 137.

during growth and ripening, (35) 738.

factors affecting, (29) 833.

in relation to soils, (38) 518.

conservation in United States, (38) 792.

continuous culture, (27) 831, 832, 833; (29) 227;

(30) 124; (40) 32, 419, 431, 731, 733, 824.

cooperative experiments, (29) 138.

correlation and variation in, (32) 832.

correlation in, (31) 738; (37) 141.

cost of harvesting, (36) 441; (38) 839.

cost of production, (26) 830; (29) 690; (32) 530, 594, 638; (33) 293, 831; (35) 691; (37) 191; (39) 840; (40) 292, 488.

cost of production in Austria, (28) 594.

cost of production in 1917, (39) 688.

creatinin content, (33) 725.

critical period of growing season, (39) 811.

cross fertilization, (29) 636; (36) 441.

crosses, suppression of characters in, (36) 738.

crossing experiments, (31) 531.

cultivated, origin, (32) 131.

culture, (26) 134; (27) 337; (30) 434; (31) 35, 532;

(32) 132, 226; (34) 138, 694; (35) 33; (37) 340,

736; (38) 33, 38, 140, 240, 411, 527, 636; (39) 834.

culture—

at high altitudes, (39) 810.

climatic limits, (28) 513.

contests in Western Australian schools, (30)

794.

continuous, (30) 120; (32) 533; (34) 138; (35)

30, 536, 813; (37) 445; (39) 529.

experiments, (26) 38, 131, 233, 329, 422, 630,

737, 830; (27) 31, 299, 232, 233, 299, 335, 336,

342, 638; (28) 431, 434, 734, 827; (29) 225,

425, 426, 427, 429, 433, 538, 630, 735, 836;

(30) 33, 133, 141, 526, 531, 632; (31) 733; (32)

36, 132, 430, 431, 526, 528, 529, 530, 531;

(33) 31, 137, 332, 633, 729, 830; (34) 39, 137,

227, 228, 230, 339, 632, 735; (35) 31, 228, 229,

534; (36) 32, 33, 132, 234, 235, 739, 830; (37)

30, 330, 436, 438, 534, 734, 823, 824, 825; (38)

38, 132, 133, 229, 333, 334, 336, 432, 433, 526,

630, 632, 634, 635, 735, 825, 830; (39) 124,

125, 126, 127, 128, 217, 227, 229, 333, 334,

335, 336, 435, 436, 437, 530, 632, 742, 834;

(40) 125, 218, 319, 329, 330, 636, 730, 731, 733,

735.

culture experiments in—

Argentina, (40) 533.

Australia, (40) 230, 332.

Canada, (40) 228, 333, 533.

India, (40) 230, 332, 523, 825.

Rhodesia, (40) 230, 825.

South Africa, (40) 831.

culture—

for chicken feed, (38) 827.

for hay, (37) 436.

for silage, (26) 574.

in Alabama, (32) 137; (40) 142.

America, treatise, (26) 134.

Argentina, (35) 136, 740.

arid region of Portugal, (40) 33.

Australia, (34) 227.

Canada, meteorological factors in, (35) 15.

Chile, (39) 231.

cotton belt, (32) 533.

east Siberia, (32) 138.

eastern Oregon, (36) 830.

eastern United States, (31) 438.

Wheat—Continued.

culture—continued.

in England, (37) 445.

Georgia, (32) 833.

Illinois, (30) 441; (39) 35.

India, (28) 736; (30) 639; (32) 131; (36) 385;

(39) 229.

Iowa, (39) 138.

Kansas, (39) 743.

Maryland and vicinity, (36) 736.

Mexico, (32) 131.

Michigan, (39) 320.

Mississippi, (33) 431.

Montana, (32) 533; (39) 840.

Natal, (27) 536.

Nebraska, (29) 534; (30) 831.

New Mexico, (39) 744; (40) 18.

New South Wales, (28) 633.

North Carolina, (27) 531.

North Dakota, (40) 736.

Queensland, (28) 633.

Rhodesia, (27) 32, 637.

Russia, (26) 693.

sand hills of Nebraska, (35) 827.

Saskatchewan, (40) 533.

Southeastern States, (38) 240.

southern Idaho, (36) 227.

Texas Panhandle, (29) 429; (35) 440.

the Tropics, (34) 227.

United States, (38) 717.

Victoria, (36) 441.

western Nebraska, (35) 438.

Wisconsin, (30) 141.

on Great Plains, (38) 342, 440.

on moor lands, (29) 835; (30) 229.

on Ozark uplands, (38) 217.

relation to rainfall, (28) 638; (33) 715.

research scholarship for, (26) 498.

under dry farming, (26) 828; (40) 435; (32)

525, 731; (34) 734; (36) 528, 529; (37) 329,

529; (38) 240; (39) 131.

under irrigation, (34) 528.

cytological studies, (26) 325.

damaged, analyses, (39) 773.

density as an index of milling value, (34) 256.

density indexes, (38) 537.

depth of sowing tests, (27) 834.

destruction by wasps, (37) 667.

determination of—

acidity and titrable nitrogen in, (40) 507.

cellulose in, (40) 14.

indigestible residue, (39) 501, 502.

specific gravity, (28) 22.

development—

as affected by heating seeds, (37) 742.

as affected by soil water and nitrogen fertili-

zation, (27) 38.

of grain, (32) 121.

dietary properties, (37) 264.

direct panification, (40) 460.

disease, new, (37) 653.

diseases—

and insect pests, (37) 340.

in Australia, (38) 48.

Brazil, (32) 238.

Egypt, (30) 747.

New South Wales, (34) 845.

Western Australia, (33) 845.

notes, (29) 243, 845; (31) 841; (35) 245; (36)

541; (38) 646.

studies, (28) 442; (30) 846; (39) 51.

treatment, (26) 134; (35) 652, 749; (37) 895.

distance experiments, (30) 732; (32) 832.

distribution of nitrogen in, (36) 269.

dockage, (38) 694, 840.

dry-farm, chemical studies, (30) 460.

dry-farm, protein content, (39) 342.

drying for milling purposes, (36) 361.

durum—

analyses and baking tests, (33) 564.

and bread, crossing, (40) 143.

and bread, linkage in crosses, (39) 643

baking quality, (37) 362.

culture experiments, (38) 838.

culture in Arizona, (40) 142.

delayed germination of, (26) 434.

middlings and bran, analyses, (40) 571.

milling and baking tests, (30) 662; (34) 67.

Wheat—Continued.

- durum—continued.
 - notes, (29) 233.
 - production in United States, (26) 94.
 - tempering, (26) 461.
 - varieties, (36) 830; (38) 838.
- dwarf varieties, stability, (30) 441.
- dwarfness in, (40) 828, 831.
- dynamiting and subsoiling experiments, (32) 528.
- eelworm disease, (40) 144, 849.
- effect on—
 - color of egg yolks, (31) 474.
 - soil fertility, (27) 136; (38) 624.
 - soil moisture, (28) 321; (34) 17.
 - succeeding crops, (32) 224.
- Egyptian, investigations, (36) 739.
- electroculture, (28) 326, 533.
- electroculture experiments, (27) 231.
- emasculating, (40) 233.
- embryo, dietary deficiencies of, (35) 265.
- embryos, transfer to dead seed kernels, (27) 740.
- English, storage, (40) 637.
- ergot, notes, (40) 849.
- exports from Russia, (26) 190.
- factors affecting composition, (26) 434.
- factors affecting quality, (33) 637; (35) 832; (37) 38; (39) 238, 443.
- factors determining milling quality, (36) 297.
- fall sown, increasing acreage, (39) 532.
- fall v. spring sown, (39) 836.
- farms, studies, (40) 488.
- Federation, notes, (27) 437.
- feed, analyses, (36) 167; (40) 665.
- feeding, (34) 494.
- feeding flour, analyses, (40) 665.
- feeding value, (34) 867.
- fertilization in relation to frost injury, (35) 642.
- fertilizer experiments, (26) 131, 232, 422, 424, 426, 439, 522, 527, 537, 538, 630, 631, 639, 727, 818, 829, 838; (27) 32, 125, 137, 324, 335, 336, 337, 342, 629, 831, 832, 834, 840; (28) 124, 221, 335, 633, 723, 724, 735; (29) 25, 126, 127, 227, 228, 632, 727, 728, 736; (30) 125, 229, 235, 325, 326, 335, 531, 627, 821; (31) 31, 123, 133, 139, 328, 421, 430, 733, 738, 828; (32) 137, 322, 431, 629, 630, 814, 819; (33) 137, 219, 226, 326, 625, 632, 817, 828; (34) 22, 25, 128, 131, 423, 424, 518, 519, 520, 622, 630, 632, 723, 809; (35) 22, 30, 126, 218, 220, 325, 326, 424, 425, 427, 430, 520, 536, 724; (36) 217, 220, 235, 325, 338, 425, 428, 437, 440, 529, 735, 829; (37) 30, 214, 215, 229, 238, 323, 337, 436, 438, 627, 734, 823, 831; (38) 133, 217, 240, 432, 433, 518, 620, 630, 726, 820, 829; (39) 22, 116, 127, 217, 227, 334, 335, 421, 427, 436, 529, 530, 531, 540, 624, 738, 742, 816, 839; (40) 39, 218, 230, 231, 319, 332, 333, 434, 523, 524, 533, 621, 622, 734, 735, 824, 825, 831.
- fields, weed control in, (40) 536, 637.
- fixity of races in, (30) 341.
- flag smut, notes, (28) 846.
- flag smut, treatment, (29) 845; (31) 746; (34) 644.
- flintiness and starchiness in, (36) 235.
- flour, *see* Flour.
- flour substitutes, (39) 67, 164, 267, 470, 769, 871; (40) 66, 67, 173, 360, 657, 762, 863.
- flour substitutes—
 - analyses, (39) 870.
 - milling experiments, (40) 556.
 - protecting from insects, (40) 59.
 - recipes, (40) 361.
- flowering and pollination of, (32) 832.
- fly, notes, (29) 357; (31) 50.
- following alfalfa, (39) 436.
- foot disease, notes, (28) 51, 52; (29) 150; (30) 242, 243, 349, 541; (31) 51; (40) 845.
- foot rot, treatment, (36) 535.
- for pigs, (33) 73.
- for summer silage, (29) 473.
- French, gluten content, (32) 63.
- from imported and home-grown seed, quality, (33) 41.
- from Sunpan, China, description, (26) 135.
- from trans-Volga districts, nitrogen content, (31) 334.
- frost injuries, (27) 349; (38) 148.
- frosted, germination, (40) 443.
- frosted, notes, (29) 242.
- frozen, for pigs, (28) 772.
- fumigation with hydrocyanic acid gas, (33) 522.

Wheat—Continued.

- Fusarium diseases in Bavaria, (30) 748.
- garlicky, drying and cleaning, (36) 361.
- germ, analyses, (27) 872.
- germ, digestion coefficients, (28) 170.
- germ ripening experiments, (26) 131.
- germ, use in bread making, (39) 870.
- German and foreign, bread making qualities, (30) 257.
- German, composition and baking quality, (32) 252.
- germinated, baking and milling tests, (29) 661, 863.
- germinated, baking quality, (30) 555; (37) 862.
- germinating—
 - anaerobic respiration, (29) 539.
 - disease of, (34) 644.
 - energy transformations, (36) 525.
 - investigations, (35) 632.
 - new disease of, (33) 847.
 - pentosan content, (29) 525.
- germination and purity tests, (37) 238.
- germination as affected by —
 - age, (27) 740.
 - anesthetics, (27) 220.
 - calcium cyanamid, (33) 818.
 - carbon bisulphid, (27) 131, 342.
 - copper sulphate, (32) 749.
 - depth of planting, (36) 437.
 - fertilizers, (29) 327.
 - formaldehyde, (36) 638.
 - fungicides, (26) 845; (29) 346.
 - fungicides and insecticides, (30) 242, 837.
 - hot water treatment, (30) 449.
 - orwood, (28) 536.
 - Roentgen rays, (28) 128.
 - silver nitrate, (34) 31.
 - stimulants, (26) 131.
 - superphosphates, (27) 840.
 - temperature, (29) 731; (30) 531.
- germination—
 - at different dates after threshing, (40) 443.
 - effect on baking quality of flour, (26) 356.
 - energy of, (29) 538.
 - in electrolytic solutions, (31) 427.
 - in mercury vapor light, (30) 827.
 - studies, (31) 530.
 - tests, (29) 223, 740; (30) 236, 837; (31) 733.
 - tests in hydrogen peroxid, (27) 201.
- germinative ability and vegetative force, (29) 740.
- germs, analyses and feeding value, (29) 467.
- Ghirka, improvement, (36) 337.
- gliadin and barley hordein, relationship, (31) 377.
- gliadin, hydrolysis, (26) 22; (28) 607.
- glume rust, notes, (36) 747.
- gluten—
 - as affected by vegetable proteins, (26) 67.
 - colloidal swelling, (34) 111; (36) 862.
 - content, decreasing, (33) 659.
 - formation, (37) 341.
 - hydrolysis, (28) 607.
- grades, (32) 138.
- grading, (29) 661; (30) 663; (32) 634; (37) 863; (39) 871; (40) 39, 144, 145.
- grain color, environmental influences, (38) 538.
- grains from different parts of ear, (36) 440, 534.
- graphic summary of seasonal work, (39) 495.
- grass—
 - as pasture crop, (39) 130.
 - field tests, (39) 135.
 - identification, (29) 741.
 - irrigation experiments, (32) 224.
 - monograph, (29) 141.
 - slender, culture experiments, (32) 528.
 - slender, seeding on ranges, (30) 35.
 - slender, yields, (40) 733.
 - water requirement, (32) 127.
 - western, bacterial disease, (34) 349; (38) 249.
 - western, characteristics, (36) 638.
 - western, Phoma disease of, (34) 846.
- green, analyses, (29) 467.
- green manuring experiments, (35) 426; (36) 234; (37) 425, 734; (39) 326, 725; (40) 824.
- greensand potash for, (40) 423.
- grinding, power required for, (35) 586.

Wheat—Continued.

- ground—
 - analyses, (27) 774; (31) 65.
 - puffed, analyses, (29) 666.
 - v. whole, for pigs, (31) 869.
- growing in sand media, (36) 297.
- growing without potash, (40) 134.
- growth as affected by—
 - alkali, (34) 125; (36) 118.
 - concentration of nutrient solution, (35) 436.
 - electricity, (30) 827.
 - light, (28) 227.
 - manganese, (30) 823.
 - meteorology, (29) 510.
 - radioactivity, (28) 731.
 - spacing, (31) 328.
 - stimulants, (35) 434.
 - temperature, (29) 731.
- growth—
 - in association with weeds, (38) 734.
 - heated soils, (31) 216; (35) 722.
 - sterilized soils, (31) 336.
 - water cultures, (36) 328.
 - metabolism, and imbibition, (38) 729.
 - on volcanic ash, (29) 726.
 - relation to climate, (35) 116.
 - relation to temperature and moisture, (40) 19.
 - studies, (40) 31, 233.
 - studies, methods, (38) 526.
- hail injuries to, (33) 127.
- handling in bulk, (32) 231; (37) 91, 492.
- hard—
 - culture in United States, (33) 235.
 - red, culture in Idaho, (39) 342.
 - red spring, comparison, (33) 361.
 - red spring, milling tests, (30) 662.
 - softening in Arizona, (40) 142.
 - spring, culture, (33) 337.
 - spring, varieties, (34) 39.
- hardiness, relation to sap density, (39) 430.
- hardness and softness, inheritance, (40) 143.
- harvest, 1916, (36) 396.
- harvest, 1918, handling in Kansas, (40) 92.
- harvesting at different stages, (40) 333.
- harvesting experiments, (26) 838.
- hay, analyses, (29) 467.
- hay, character and digestibility, (31) 364.
- head disease, description, (27) 351.
- heads, determination of density, (32) 42; (38) 537.
- heads, fungus disease of, (34) 845.
- heating, moisture content, (38) 538.
- heredity of albinism in, (31) 329.
- history of, (31) 131.
- humic nitrogen content, (40) 510.
- Humpback, (36) 533.
- Hungarian, grain characters in, (31) 531.
- hybrid, new, (37) 445.
- hybrid, notes, (30) 140.
- hybrid, spontaneous appearance, (29) 636.
- hybridization experiments, (26) 831; (28) 828; (30) 733; (34) 228; (36) 436.
- hybrids, repulsion in (31) 531.
- ideal climate for, (38) 717.
- improvement, (28) 141, 638; (32) 630; (36) 338.
- improvement—
 - by selection, (29) 532; (31) 438, 531, 829.
 - in Argentina, (37) 823; (38) 741.
 - in Australia, (32) 399; (40) 635.
 - in Canada, (37) 831.
 - of nitrogen content, (26) 739.
- improvers, notes, (26) 358.
- in northern Turkestan, (32) 231.
- Indian, handbook, (29) 789.
- Indian, milling and baking quality, (26) 135.
- infection by soil fungi, (26) 746.
- inheritance—
 - in, (34) 531; (37) 332; (40) 140, 525.
 - of awn color in, (38) 836.
 - characters in, (28) 638; (35) 233.
 - flowering and ripening periods, (40) 830.
 - grain texture, (40) 143.
 - winter resistance in, (29) 635.
- inoculation experiments, (35) 32.
- insect survey, (39) 863.
- insects affecting, (26) 753; (34) 851; (38) 197; (39) 863.
- irrigated, chemical studies, (30) 460.
- irrigated, protein content, (39) 342.

Wheat—Continued.

- irrigation, (29) 621; (31) 328; (39) 132, 343; (40) 636.
- irrigation experiments, (27) 536; (28) 130, 132, 134, 230, 588, 638; (29) 32, 138, 226; (30) 35; (31) 36; (32) 37, 225, 531; (33) 225, 631, 827, 884; (36) 35, 234, 235, 385, 886; (37) 30, 238, 340, 640, 822; (38) 636; (39) 132; (40) 230.
- jointworm, control, (39) 863; (40) 170.
- jointworm in Ohio, (39) 863.
- kernel, crease of, (30) 666.
- kernel, development, (31) 234; (34) 633; (37) 24.
- kernel, factors affecting shape, (40) 244.
- lands of western Australia, fertility, (29) 315.
- leaf miner, studies, (29) 257.
- leaves, anatomy of, (35) 443.
- lessons on, (26) 392; (28) 393.
- lime-magnesia requirements, (29) 521.
- liming experiments, (28) 223, 624; (29) 223; (32) 31; (34) 132, 133; (36) 27, 38; (39) 116, 221, 421, 529, 530; (40) 815.
- localization of betain in, (27) 203.
- lodging in relation to vascular bundles, (33) 332.
- loose smut—
 - description and treatment, (26) 341.
 - life history, (37) 839.
 - notes, (30) 448; (38) 548.
 - resistant varieties, (39) 852.
 - studies, (28) 545, 845.
 - treatment, (26) 546; (27) 246, 746, 848; (28) 445, 646; (29) 45, 548; (31) 147, 342; (37) 247; (38) 240.
- loss in weight after harvesting, (38) 635.
- louse, notes, (30) 658.
- macaroni and bread, linkage in crosses, (39) 643.
- magnesia for, (40) 824.
- maltase content, (31) 204.
- manganese in, (34) 339.
- manuring experiments, (40) 636, 730, 731.
- manuring in winter, (37) 195.
- marketing, car supply in, (31) 790.
- marketing in Pacific coast region, (26) 293.
- Marquis, (35) 443.
- Marquis, history and culture, (30) 738; (36) 137.
- Marquis, milling quality, (30) 666, 760.
- meal, digestibility, (30) 566.
- measurements, (30) 235.
- methods of analysis, (37) 11.
- Mexican, composition and quality, (32) 63.
- middlings—
 - analyses, (26) 72, 768, 873; (27) 170, 171, 371, 469, 670, 774, 872; (28) 265, 364, 465, 669; (29) 666, 769; (30) 67, 68, 169, 565, 671, 868; (31) 73, 366, 467, 564; (32) 169, 259, 667; (33) 371, 759; (34) 72, 371, 467, 665, 767; (35) 373, 374, 562, 867; (36) 167, 268, 667, 765; (37) 268, 471, 767; (38) 67, 368, 369, 572, 665; (39) 167, 270, 370, 773; (40) 72, 571, 665.
 - digestibility, (37) 677.
 - feeding value, (40) 278, 668.
 - white, definition, (28) 98.
- midge—
 - control, (39) 863.
 - in Ohio, (39) 766, 863.
 - Ontario, identity, (40) 653.
 - Sweden, (39) 159, 866.
 - notes, (28) 657; (29) 357.
 - on barley, (39) 159.
- mildew—
 - in Australia, (38) 48.
 - notes, (27) 349; (28) 149; (34) 243, 644.
 - relation to light, (30) 747.
 - resistant varieties to, (27) 545.
 - studies, (27) 545; (33) 847.
- mill market for, (38) 895.
- milling, (31) 759.
- milling and baking—
 - qualities, (32) 159, 160, 333; (33) 361, 659; (36) 862.
 - studies, (26) 461; (30) 460, 661, 663, 664, 666, 668, 759.
 - tests, (26) 43; (27) 165; (28) 458, 862; (29) 226, 262, 661, 863; (31) 256, 258; (32) 760; (33) 361; (35) 162, 265, 367, 534, 555, 835, 859; (36) 441, 464, 531, 550, 831; (37) 39, 361, 860, 863; (38) 239, 439, 663; (40) 658.
- milling—
 - properties, (27) 266, 867.
 - qualities, (28) 761; (37) 570.

Wheat—Continued.

- milling—continued.
 - quality as affected by barley and rye, (29) 866.
 - quality as affected by germination, (29) 863.
 - quality in relation to physical characteristics of kernel, (35) 555.
 - tests, (28) 334; (36) 761.
- mineral nutrition, (28) 224.
- mineral requirements, (37) 799.
- mites, studies, (40) 855.
- mixed feed, analyses, (34) 169.
- moisture capacity, (37) 362.
- moisture content, (26) 462.
- Montana-grown, types and quality, (37) 361.
- morphological studies, (39) 341.
- mutation variety of, (31) 234.
- natural crossing in, (40) 142.
- nematode disease, (39) 649; (40) 144, 849.
- nematodes affecting, (30) 243, 448; (32) 448; (38) 850.
- nitrate in, (40) 300.
- nitrogen and phosphoric acid in, (26) 661; (27) 500.
- nitrogen, biological value, (40) 660.
- nitrogen content as affected by culture, (34) 735.
- nitrogen content, variation in, (35) 340.
- North Dakota, screenings in, (29) 866.
- October sown v. December sown, (33) 831.
- of Algeria and Tunis, (34) 227.
 - Baluchistan, Khorassan, and Kurram Valley, (37) 446.
 - Colorado, properties, (39) 238, 443.
 - Colorado, studies, (40) 39.
 - Queensland, analyses, (40) 314.
 - Victoria, milling and baking qualities, (31) 256.
 - Washington, classification, (37) 237.
 - west-central Minnesota, phosphates for, (40) 320.
 - Wisconsin, milling and baking qualities, (40) 761.
- offal, analyses, (27) 570; (28) 669; (31) 564; (39) 270.
- offal, classification and standardization, (31) 71.
- official standards, (40) 39, 144.
- oil, toxic effects on rats, (36) 61.
- on inoculated soil, (39) 519.
- orange leaf rust of, (31) 641.
- origin, (28) 761.
- parentage of, (26) 529.
- pedigreed, in Wisconsin, (40) 624.
- pedigreed, yields in Wisconsin, (37) 438.
- peptic digestibility, (29) 164.
- percentages of flour from, (36) 662.
- phenological observations, (40) 811.
- phosphorus content, (27) 461; (30) 362.
- physical structure and physiology, (26) 358.
- physiological requirements, (39) 28, 331.
- phytic acid and its salts in, (37) 108.
- plant—
 - composition, (35) 832.
 - methods of analysis, (37) 11.
 - microchemical studies, (37) 631.
 - mineral requirements, (39) 331.
- planting and harvesting dates, (26) 533.
- plat tests, technique, (40) 227, 623.
- plats, hoop harvesting, (39) 539.
- poisoning of horses by, (27) 888.
- Polish, inheritance in, (40) 140, 525.
- Polish, milling and baking tests, (40) 234.
- pollination, (36) 527.
- Portuguese varieties, (30) 40.
- powdery mildew, infection, (26) 646; (33) 244.
- powdery mildew, studies, (35) 651, 844; (37) 749.
- precipitin test for, (31) 733.
- premature death of, (29) 151.
- prices—
 - and shrinkage, (34) 337.
 - in England, (26) 190.
 - in Germany, (30) 896.
 - in United States, (38) 742.
 - movement, (31) 894.
 - three centuries of, (40) 792.
- problem of 1917 harvest, (39) 688.
- production—
 - and consumption, (30) 391, 692.
 - marketing, (26) 791.
 - prices in 1915, (35) 793.

Wheat—Continued.

- production—continued.
 - and prices in United States, 1908-1918, (40) 93.
 - rainfall, correlation, (35) 14.
- in Argentina, (27) 193.
- Australia, (40) 635.
- California, (38) 134.
- Canada, (26) 838.
- India, (36) 92.
- 1911, (26) 595, 792.
- 1913, (31) 95.
- Russia, (26) 294.
- Spain, (28) 736.
- the Tropics, (40) 637.
- United Kingdom, (26) 793.
- United States, (26) 293; (38) 743.
- 1918 program, (38) 837.
- present and prospective, (38) 595.
- products—
 - analyses, (26) 43, 665; (29) 769; (30) 169; (32) 169; (36) 665.
 - growth-promoting properties, (40) 67.
 - moisture capacity, (37) 362.
 - preparation, (38) 365.
 - vitamin content, (39) 314.
- protein content—
 - following black fallow, (34) 230.
 - improvement, (39) 742.
 - relation to rainfall, (28) 537; (33) 41.
 - relation to soil moisture, (30) 662.
 - variations in, (30) 836.
- protein—
 - efficiency for milk production, (33) 276.
 - nutritive value, (26) 155; (39) 665, 666.
- proteins—
 - alcohol-soluble, (33) 162.
 - effect of feeding at different planes of intake, (36) 361.
 - supplements for, (36) 560.
- puffed, analyses, (30) 67, 68.
- pure line, variation in, (31) 130.
- pure strains, tests, (39) 129.
- purebred, mutation in, (29) 433.
- purslane sawflies affecting, (29) 252.
- quicklime treatment, (40) 337.
- rate of seeding tests, (27) 335, 639; (28) 135; (32) 42.
- ratio of grain to straw, (36) 218.
- ratio of tops to roots, (31) 628, 733.
- Red Olona, improvement, (37) 141.
- Red Rock, (37) 799; (40) 233.
- Red Rock, in Michigan, (39) 335.
- region, meteorological service, (39) 718.
- relation of size of seed to yield, (26) 434.
- relation to climate and soils, (26) 434.
- relationship of species, (26) 827.
- relative yielding capacity, (40) 625.
- requirements and production of the Allies, (40) 487.
- resistance to cold, (39) 525.
- resistance to diseases and insects, determination, (26) 246.
- Riëti hybrid of, (30) 531.
- rod-row tests, technique, (38) 429.
- root aphids, notes, (29) 252.
- root development—
 - in, (26) 327.
 - in India, (39) 230.
 - of seedlings, (30) 136.
- root system, (32) 529, 530, 634.
- rotation experiments, (28) 338; (29) 227; (31) 738; (33) 429, 728, 828, 829; (36) 437, 829; (38) 129; (40) 331, 431, 731, 733.
- Russian, (40) 535, 831.
- Russian, nitrogen content, (32) 833.
- rust—
 - effect on feeding value of straw, (40) 768.
 - fungus, wintering over, (26) 846.
 - host relations, (26) 142.
 - in Bavaria, (33) 847.
 - in Norway, (35) 545.
 - infection through seed, (37) 751.
 - investigations, (26) 647.
 - mode of infection, (26) 143.
 - new form, (39) 454.
 - new, in United States, (33) 744.
 - new strain, (40) 845.

Wheat—Continued.

rust—continued.

- notes, (29) 152, 445; (30) 845; (31) 641; (34) 843; (35) 45; (36) 247; (37) 247, 453, 749; (39) 752.
- overwintering in Australia, (38) 48.
- resistance in, (30) 242; (31) 147; (35) 749; (36) 146; (39) 550; (40) 745.
- resistance, inheritance, (29) 532.
- resistant hybrid, (27) 849.
- resistant varieties, (26) 439, 447; (30) 230, 748; (32) 750; (38) 645, 646; (39) 336, 852; (40) 344.
- spores in seeds of, (30) 241.
- studies, (33) 546; (38) 48; (40) 642.
- treatment, (26) 143; (28) 242.
- wintering over in uredospore form, (33) 546.
- rusts, description, (35) 47.
- rusts in Canada, (34) 51.
- rye hybrid, notes, (36) 739.
- salvage, analyses, (26) 714; (37) 268.
- sampling and grading, (38) 140; (40) 39.
- scab and corn root rot, relation, (40) 49.
- scab, notes, (39) 851.
- Sclerotium rolfsii on, (39) 852.
- scourings extracts, effect on baking quality of flour, (26) 356.
- screenings, analyses, (26) 568; (27) 170 ;(28) 464, 465; (30) 671; (32) 862; (33) 371; (34) 168.
- screenings, composition and digestibility, (32) 666.
- screenings, composition and value, (28) 769.
- screenings, digestibility, (30) 566; (31) 766.
- secondary rootlets, (40) 32.
- seed—
- bed, preparation, (33) 217; (34) 632; (36) 131, 215.
- cleaning, (40) 40.
- distribution in India, (29) 538.
- durum, resting period, (36) 825.
- failure to germinate, (34) 541.
- fungus disease of, (31) 148; (32) 750.
- germination as affected by disinfectants, (31) 824.
- home-grown v. imported, (40) 636.
- locally-grown, (40) 658.
- longevity, (38) 822.
- longevity in relation to temperature, (37) 725.
- position in planting, (40) 635.
- resistance to desiccation, (40) 39.
- selection, (32) 231; (36) 638.
- selection tests, (40) 334.
- size and sprout value in relation to yield, (38) 732.
- size as affecting resultant plants, (39) 743.
- tests and treatment, (29) 446.
- treatment, (26) 299; (28) 442; (33) 546; (39) 238, 363; (40) 443.
- viability as affected by age, (31) 624.
- seeding—
- depths, (40) 227.
- experiments, (26) 43, 135; (29) 223, 224, 225, 425, 429; (30) 135, 526; (31) 328; (32) 525, 528, 530, 531, 533, 832; (33) 137, 729, 734; (35) 336, 534; (36) 33, 34, 38, 134, 338, 437, 829, 835; (37) 134, 226, 530, 731; (38) 240, 630; (39) 227, 228, 334, 744, 839; (40) 228, 333, 334, 337, 429, 636, 730, 731, 733.
- experiments, error in, (39) 830.
- experiments under irrigation, (39) 133.
- in furrows, (36) 831.
- late in the fall, (26) 299.
- with vetch, (40) 243.
- seedlings, alkali tolerance, (27) 500; (29) 322.
- seedlings as affected by—
- acid or alkaline conditions, (27) 130.
- cerium chlorid, (31) 325.
- creatinin and creatin, (27) 621.
- seedlings—
- distribution of stomata in, (32) 221.
- growth as affected by salts, (31) 425, 426.
- growth in bacterized peat, (31) 826.
- growth in sand cultures, (36) 212.
- living and killed, respiration, (30) 522.
- purification, (29) 645.
- respiration of, (31) 427.
- respiratory activity in sunlight, (34) 30.
- transpiration in, (28) 537, 629.

Wheat—Continued.

selection, (40) 523.

selection experiments, (35) 336, 527, 534; (36) 440, 735; (37) 32, 226; (38) 342, 633, 635; (39) 126; (40) 233.

selection of varieties, (28) 633.

self-fertilization in, (33) 437.

sensitiveness to fungicidal treatment, (29) 151.

Septoria disease in Australia, (37) 149.

sheath miner, notes, (37) 255.

sheath miner, studies, (37) 160.

sheath worm, description, (36) 59.

shipment via Panama Canal, (40) 637.

shorts, analyses, (26) 768; (27) 469; (28) 572; (29) 769; (30) 169, 671; (31) 863; (33) 371; (34) 467; (35) 562; (36) 765; (38) 369.

shorts, digestibility, (37) 678.

shorts, digestibility and productive value, (37) 865.

shredded, analyses, (27) 774.

shrinkage tests, (38) 840.

shrunk, analyses, (32) 169.

silage for dairy cows, (37) 75.

silage, notes, (33) 337.

smut—

as affected by date of planting, (31) 50.

cause, (30) 47.

in Dutch East Indies, (38) 448.

in Washington, (40) 49.

notes, (40) 730.

prevention, (27) 840.

resistant varieties, (26) 43; (40) 346.

resistant variety, (29) 244.

spores, effect on domestic animals, (27) 882.

studies, (37) 46, 149, 750; (38) 645, 849; (40) 345, 346, 642, 746.

treatment, (27) 137, 334, 649; (29) 152, 223; (30) 47, 242, 748; (34) 51, 844; (36) 739; (39) 248, 353, 549, 851; (40) 49, 334, 346, 535, 636.

wind dissemination, (40) 642.

smuts—

descriptions and treatment, (31) 446; (38) 249, 548.

in Australia, (38) 48.

life history and treatment, (28) 445.

notes, (28) 544; (35) 348.

treatment, (28) 51, 745; (31) 344; (33) 846.

soil exchange experiments, (27) 500; (29) 835; (30) 440.

soil moisture removal by, (40) 430.

soils in United States, (37) 799.

spikes, distribution of nitrogen in, (26) 739.

spikes, forms of, (32) 634.

spring—

culture in Illinois, (40) 443.

culture in Indiana, (40) 735.

culture in Ohio, (40) 738.

culture in Wyoming, (40) 636.

glume formation in, (32) 231.

handling and storage, (39) 540.

in England and western Europe, (37) 445.

in Great Plains, (33) 137.

northern and southern limits, (38) 810.

of Ohio, gluten properties, (40) 658.

production in Illinois, (39) 35.

selection experiments, (33) 436.

v. fall plowing, (33) 332.

sprouted, baking tests, (27) 764; (33) 864.

sprouting, alcohol formation by, (30) 522.

sprouts, digestibility, (30) 566.

squarehead, varieties, (35) 739.

stalk disease—

control, (39) 549.

notes, (30) 242, 243, 349, 541.

studies, (34) 244; (37) 248, 653.

standards, (38) 538.

starch—

as affected by pancreas diastase, (28) 660.

color reaction, (40) 411.

content, (35) 108.

gelatinization point, (30) 10.

studies, (31) 828.

statistical notes, (40) 626.

stem maggot, notes, (28) 653; (29) 252.

stem rust, resistance to, (39) 550.

stem rust, resistant varieties, (39) 852.

Wheat—Continued.

- stem sawfly, western, habits, (37) 855.
- stem sawfly, western, studies, (34) 250.
- stems, studies, (31) 531.
- sterile spikelets in, (35) 233.
- stinking smut—
 - chemical composition, (26) 746.
 - description and treatment, (26) 341.
 - effect on form of wheat heads, (28) 845.
 - inoculation experiments, (33) 245; (37) 750.
 - investigations, (34) 644.
 - morphology, (35) 845.
 - notes, (26) 746; (28) 51, 547; (32) 341; (38) 848.
 - overwintering, (37) 247.
 - relation to time of seeding, (29) 151.
 - spores, vitality, (26) 846.
 - studies, (34) 644, 845; (35) 845.
 - treatment, (26) 447, 746; (27) 445, 734; (28) 51, 242, 546, 745; (29) 750; (30) 351; (32) 49, 145; (33) 744; (34) 843; (37) 247; (38) 240, 445.
- stooling in, (30) 235.
- storage, (40) 337, 637.
- storage and handling in bulk, (36) 894; (37) 91.
- storage experiments, (30) 639.
- stored, insects affecting, (37) 356; (40) 458, 855.
- stored, respiration studies, (39) 27, 35.
- stored, variations in weight of, (31) 235.
- strains, mixed culture, (39) 129.
- straw—
 - analyses, (26) 770; (28) 768.
 - analyses and use as human food, (33) 866.
 - as bedding, (39) 621.
 - ash analyses, (27) 327; (29) 861.
 - composition and digestibility, (34) 565.
 - effect on soil nitrogen, (35) 218.
 - in legume silages, (39) 310, 878.
 - lime and phosphorus content, (26) 873.
 - methods of analysis, (37) 11.
 - rusted, analyses, (28) 464.
 - rusted, feeding value, (40) 768.
 - worm, notes, (35) 58; (36) 59.
- strength and gluten content, variations, (28) 761.
- striped rust, overwintering, (39) 354.
- stubble, disposal, (37) 531.
- studies, (26) 738; (27) 763.
- subsoiling experiments, (26) 631; (37) 732.
- substitutes for, (38) 662, 867.
- substitutes in bread making, (38) 663.
- sulphur in, (31) 817.
- sun, description, (26) 440.
- supplements in bread making, (37) 263.
- supply in France, (37) 697, 890.
- supply in United States, (38) 867.
- susceptibility to mildew and yellow rust, (29) 844.
- susceptibility to stinking smut, (26) 54.
- Swiss types, (27) 338.
- take-all, description and treatment, (28) 646.
- take-all, treatment, (35) 750.
- temporary roots in, (35) 135.
- textbook, (34) 293.
- threshing—
 - exhaust fans for, (40) 49, 746.
 - in variety tests, (36) 534.
 - injuries, (37) 534.
- thrips, new, (33) 354.
- thrips, notes, (28) 452; (35) 656.
- tillering, (29) 538; (31) 835; (32) 832; (33) 138; (37) 644.
- toxicity for cows, (37) 766; (39) 72.
- transpiration in, (34) 522; (39) 517.
- transplanting, (38) 38.
- treatise, (32) 42.
- Turkistan varieties, description, (30) 830.
- unthreshed, loss in stack, (32) 138.
- v. corn for hens, (39) 74, 275.
- v. corn for pigs, (31) 869.
- valuation, (34) 256.
- variation—
 - and correlation in, (39) 743.
 - in, (33) 533, 835.
 - in composition, (27) 499.
 - nitrogen content, (29) 38.
 - pure lines, (32) 96.
 - yield, (29) 39.
- varietal nomenclature, (39) 839.

Wheat—Continued.

- varieties, (26) 39, 43, 143, 232, 233, 331, 436, 439, 440, 538, 630, 631, 632, 733, 829, 830; (27) 32, 137, 234, 334, 337, 429, 437, 530, 531, 536, 637, 736, 739, 832, 834, 840; (28) 531, 533, 638, 827, 828; (29) 31, 222, 225, 228, 336, 424, 428, 433, 530, 630, 736; (30) 33, 134, 135, 141, 229, 235, 342, 434, 435, 525, 531, 731, 738, 829; (31) 133, 430, 733, 829; (32) 36, 37, 137, 224, 226, 333, 431, 527, 528, 529, 530, 730, 731, 827, 833; (33) 31, 33, 34, 41, 137, 235, 333, 430, 431, 631, 632, 633, 728, 729, 828, 831; (34) 138, 143, 227, 229, 629, 733, 734, 735; (35) 30, 32, 228, 229, 526, 527, 528, 534, 637, 826; (36) 32, 33, 34, 36, 131, 132, 133, 227, 435, 436, 437, 529, 634, 638, 735, 739, 829, 830; (37) 29, 30, 32, 33, 132, 227, 228, 237, 330, 333, 340, 436, 438, 529, 640, 641, 731, 823, 824, 825, 826; (38) 30, 38, 131, 133, 229, 239, 240, 333, 432, 433, 527, 630, 632, 634, 635, 636, 830, 832.
- varieties—
 - classification, (26) 439; (27) 31; (29) 833.
 - classification and registration, (37) 437, 799.
 - eastern, in Idaho, (39) 842.
 - emmer and spelt series, (40) 636.
 - for California, (26) 233.
 - eastern United States, (32) 336.
 - Montana dry lands, (35) 735.
 - New South Wales, (27) 338; (38) 528.
 - the Dakotas and Montana, (38) 230.
 - Utah dry lands, (38) 230.
- immune to Hessian fly, (35) 759.
- in Argentina, (40) 625.
- new Swedish, (39) 634, 642, 833; (40) 634, 642.
- of Alsace-Lorraine and vicinity, (26) 838.
- resistant to foot disease, (32) 545.
- resistant to fungi, (31) 50.
- resistant to Hessian fly, (37) 760.
- resistant to lodging, (26) 43.
- use of nutrient substances by, (28) 139, 140.
- variety—
 - groups of, (26) 43.
 - new for Kansas, (39) 539.
 - tests, (39) 125, 126, 127, 128, 130, 227, 228, 333, 334, 336, 337, 436, 437, 539, 540, 634, 642, 735, 736, 737, 738, 744, 840; (40) 32, 141, 228, 230, 231, 233, 329, 331, 332, 333, 337, 429, 431, 434, 443, 523, 524, 533, 534, 624, 636, 728, 730, 731, 732, 735, 761, 825, 831.
 - tests, experimental error, (39) 830.
 - tests, rod-row method, (40) 233.
 - tests, technique, (40) 227.
- vitality as affected by age, (27) 334.
- volume weight and grain characteristics, (37) 643.
- waste, shredded, analyses, (39) 270.
- wheat culture experiments, (38) 730.
- water requirements, (26) 129; (29) 826; (31) 328; (32) 127; (33) 726; (34) 720; (35) 633; (37) 340; (38) 227.
- water requirements in India, (27) 429.
- water-soaked, milling value, (37) 861.
- water-soluble B in, (38) 869.
- weather factor for, (35) 114.
- weed seeds in, (26) 135.
- weeding, (37) 742.
- weevils affecting, (26) 352; (39) 558.
- white grubs affecting, (29) 252.
- white-heads or take-all, notes, (30) 148.
- white-heads, studies, (28) 646.
- wild and cultivated, hybrids between, (31) 531.
- wild, in Palestine, (29) 37.
- winter—
 - and spring, in United States and Canada, (37) 533.
 - culture, (27) 739.
 - culture at Crookston, Minn., (40) 733.
 - protection, (37) 226.
 - relation between dry matter and frost resistance, (33) 235.
 - resistance, (26) 733; (39) 642.
 - resistant type, (30) 40.
 - rest period in, (30) 732.
 - spring harrowing, (39) 735.
 - sugar content, (40) 830.
 - varieties, (40) 636.
- winterkilling, (26) 638; (33) 51; (40) 821.
- wireworm larvæ, fumigation, (40) 256.
- wireworm, notes, (26) 147; (32) 555.

Wheat—Continued.

- world's supply, (39) 443.
- world's supply, treatise, (40) 244.
- xenia in, (30) 235.
- yellow berry, (33) 41; (37) 531; (40) 761.
- yellow berry, inheritance, (40) 143.
- yellow berry, studies, (36) 235.
- yellow leaf rust in Utah, (36) 48.
- yellow rust in Russia, (35) 844.
- yellow rust, studies, (34) 51, 349.
- yield—
 - after cowpeas, (35) 826.
 - and quality as affected by rainfall, (30) 662.
 - and quality, relationship, (30) 639.
 - as affected by climate, (31) 43.
 - as affected by pasturing, (30) 633.
 - as affected by weather, (38) 509.
 - forecasting, (36) 209.
 - in Australia, (38) 133.
 - in India as affected by weather, (40) 716.
 - on alfalfa stubble, (33) 828.
- yield, relation to—
 - meteorology, (34) 208, 319.
 - moisture, (34) 338.
 - physical properties of soils, (33) 815.
 - rainfall, (28) 213; (30) 418; (36) 440.
 - soil nitrate content, (40) 719.
 - temperature, (33) 117.
 - weather, (38) 14, 317; (39) 210.
- yield tests, experimental error, (39) 830.
- yields, (27) 734; (29) 138; (34) 228; (40) 735.
- yields—
 - and prices, 1866-1915, (36) 836.
 - diminishing, (31) 148.
 - error in, (28) 536.
 - in Chester Co., Pennsylvania, (39) 621.
 - in Europe, 1890-1915, (40) 93.
 - of plump v. shrunken seed, (27) 734.

Wheatless recipes, (39) 266.

Wheatstone bridge, use in biological studies, (34) 732.

Whey—

- acidity, (40) 11.
- acidity, antiseptic action, (37) 373.
- analyses, (26) 171; (27) 377.
- as manure preservative, (27) 623; (28) 424.
- ash analyses, (29) 861.
- butter, branding, (28) 278.
- butter, making, (32) 873.
- butter, manufacture, (36) 877.
- butter, notes, (32) 270.
- factors affecting specific gravity, (26) 478.
- for infants, (33) 752.
- for infants, composition, (35) 165.
- for pigs, (26) 571; (33) 762.
- from sheep and buffalo milk, analyses, (27) 575.
- heated, nutritive value, (34) 369.
- lemonade, manufacture and analyses, (29) 173.
- lemonade, notes, (27) 880.
- methods of analysis, (31) 114.
- pasteurization, (28) 277; (34) 673.
- pasteurization for calves, (36) 877.
- relation to milk constituents, (28) 176.
- separation of cream from, (31) 375.
- skimming at cheese factories, (36) 877.
- specific heat, (32) 715.
- testing for fat, (39) 182.
- utilization, (26) 779.
- yeast-like organisms in, (31) 772.

White—

- ants, *see* Termites.
- fly brown fungus, notes, (27) 350.
- fly, citrus—

- control, (26) 247.
- control in Florida, (32) 349.
- control in Texas, (26) 755.
- fungus diseases of, (29) 251.
- in Argentina, (38) 260.
- in Florida, (39) 161.
- notes, (31) 751; (34) 60.
- remedies, (26) 859; (27) 758; (29) 53; (34) 451.
- studies, (28) 753; (35) 552.

fly—

- classification, (29) 54.
- control in Florida, (27) 455; (28) 196.
- destructive to saltbush, (26) 859.
- diseases, (30) 55.
- fumigation, (39) 161.
- fungi, notes, (33) 58.
- fungus diseases, notes, (27) 356.

White—Continued.

- fly, greenhouse—
 - in Ohio, (34) 59.
 - life history and habits, (34) 452.
 - notes, (28) 854.
 - sex ratios and parthenogenesis in, (38) 458.

fly—

- in California, (26) 859.
- in Japan, (26) 755.
- migration, (27) 357.
- notes, (31) 850; (38) 654.
- parasites, introduction into Florida, (27) 860.
- pupae, weight, (27) 357.
- remedies, (29) 262; (40) 455.
- spiny citrus, notes, (37) 462; (38) 557.
- spiny citrus, studies, (39) 864.
- spiny, new host plants, (38) 459.
- studies, (27) 860; (36) 755.

fly, woolly—

- in Florida, (40) 856.
- notes, (37) 659.
- notes and remedies, (27) 357.
- studies, (29) 251; (33) 59.

grubs—

- bacterial disease of, (32) 61.
- bird enemies, (40) 547.
- common, (39) 264.
- control in Wisconsin, (38) 155.
- destruction by hogs, (37) 261.
- eradication, (34) 494.
- hyperparasites of, (34) 556.
- in greenhouse soils, (34) 161.
- in Manitoba, (39) 565.
- in Porto Rico, (34) 753; (39) 767, 868.
- injurious to potatoes, (33) 352.
- injurious to sugar cane, (33) 750; (36) 658, 753; (38) 161, 767.
- injurious to wheat, (29) 252.
- insect enemies, (40) 552.
- life history, (38) 863.
- life history and remedies, (38) 54.
- notes, (28) 256, 554, 653, 757; (29) 561, 653; (30) 454, 654, 656; (33) 252; (34) 732; (35) 54, 363; (36) 854, 856; (37) 255; (38) 162.
- parasites of, (29) 58; (34) 753.
- relation to proximity of trees, (35) 159.
- remedies, (31) 549; (32) 246; (38) 863.
- revision, (35) 467.
- studies, (27) 856; (35) 760.
- vacuum fumigation, (40) 256.

headed fungus, notes, (29) 852.

laurel poisoning cattle, (39) 386.

lead as priming for paint, (33) 90.

lead, effect on linseed oil, (28) 714.

mice, gestation period in, (28) 173.

mussel scale, notes, (29) 654.

oak leaves, plant food constituents, (37) 629.

oak, polyembryony in, (40) 226.

oak, ray system, (40) 153.

pine, bark disease of, (31) 247.

pine blister rust—

- arthropod and gasteropod carriers, (39) 248.
- control, (39) 358, 653, 858; (40) 45, 343, 542, 543, 852.
- control in Vermont, (28) 852.
- Cronartium form of, (30) 152.
- discussion, (40) 159.
- in Canada, (37) 558.
- in Maine, (39) 554.
- in Maryland, (39) 50.
- in Ontario, (39) 653.
- life history, (38) 646.
- notes, (26) 853; (27) 245, 253; (29) 554; (30) 746; (31) 54; (36) 454; (40) 53, 155.
- on felled trees, (39) 254.
- on Swiss pine, (37) 253.
- situation, review, (39) 758.
- studies, (34) 750; (40) 545, 645, 852.

pine—

- Canadian volume tables, (26) 443.
- damping-off of seedlings, (31) 640.
- device for planting seeds, (30) 146.
- diseases of, (26) 853; (29) 851.
- factors influencing reproduction, (38) 45.
- forest management, (30) 535.
- fungus diseases affecting, (26) 345, 752.
- growth of seedlings, (37) 837.
- growth studies, (32) 840.
- in Iowa, (30) 46.

White—Continued.

- pine—continued.
 - planting with red pine to insure against blister rust, (39) 146.
 - regeneration, (40) 842.
 - reproduction by wind-blown seed, (39) 750.
 - shavings, decomposition in soil, (40) 214.
 - weather injury, (38) 249.
 - weevil, *see* *Pissodes strobil.*
 - yield tables for, (31) 538.
- sage, disappearance on ranges, (39) 172.
- scale, notes, (29) 654.
- scours in calves, (26) 286; (34) 275; (38) 787; (40) 778.
- scours in calves, treatment, (36) 675.
- top, analyses, (30) 565.
- top and its control, (40) 738.
- weed as affected by top dressing, (26) 40.

Whitefish—

- breeding in Switzerland, (35) 774.
- creatinin content, (31) 760.
- of Masurian Lakes of East Prussia, (31) 356.

Whitewashes, notes, (27) 599.

Whiting, use as a food, (38) 468.

Whooping cough, transmission by factory-infected candy, (34) 366.

Whortleberry, coloring matter of, (34) 709.

Wicker, rural structures of, (35) 88.

Wigeon-grass, culture for wild ducks, (33) 251.

Wild—

- duck foods, propagation, (36) 753.
- life conservation, treatise, (32) 447.
- onions, eradication, (36) 740.

Willamette River basin, Oregon, hydrography, (32) 786.

Willia anomala, protein synthesis by, (27) 525.

Willow—

- aphid, giant, notes, (33) 554.
- beetle, imported, notes, (40) 754.
- borer, *see* *Cryptorhynchus lapathi.*
- buprestid beetles on roses, (33) 256.
- canker, studies, (39) 357.
- caterpillar, notes, (26) 348.
- galls, aeriferous tissue in, (37) 26.
- grove plant louse, notes, (28) 254.
- leaf beetle, *see* *Galerucella decora.*
- posts, preservation, (36) 244.
- rust, overwintering, (39) 553.
- scale, notes, (28) 156.
- tree caterpillar, notes, (28) 355.
- witches' broom on, (33) 56.
- wood midge, remedies, (29) 558.

Willows—

- basket—
 - breeding, (28) 543.
 - culture, (31) 839; (32) 339.
 - culture experiments, (28) 147; (38) 644.
 - description of varieties, (26) 745.
 - for Idaho, (37) 244.
 - insect pests, (39) 557.
- carpenter worm affecting, (31) 550.
- cecidomyid flies attacking, (32) 554.
- change from radial to bilateral symmetry, (32) 426.
- culture, (35) 747.
- culture and preparation for market, (31) 49.
- culture and use, (34) 347.
- cutting from irrigation canals, (37) 285.
- insects affecting, (27) 654; (28) 455.
- plantings, (38) 44.
- Polyporus lucidus* on, (39) 654.
- water, black knot disease of, (26) 853.

Wilson, James, retirement, (28) 307.

Wilt disease of garden plants, cause, (27) 223.

Wilt virus, studies, (40) 255.

Wilting—

- coefficient determinations, use, (28) 537.
- coefficient of soils, dilatometer method, (40) 22.
- determination, (40) 427.
- in plants, studies, (34) 728.

Wind—

- at Mount Tamalpais, Calif., (36) 419.
- avalanche, at Juneau, (37) 513.
- dissemination of—
 - chestnut blight by, (31) 451.
 - gipsy moth by, (28) 656.
 - red spider by, (30) 759.
- diurnal variation, (32) 810; (39) 17.
- easterly, at Blue Hill Observatory, (29) 721.

Wind—Continued.

- easterly, at Tatoosh Islands, Washington, (35) 619.
- effect on—
 - form of trees, (29) 27.
 - plants, (30) 30; (32) 825.
 - transpiration in plants, (30) 726.
- erosion, notes, (29) 811.
- foehn, of Greenland ice, (38) 812.
- foehn type, near San Francisco Bay, (38) 811.
- forecasting, (35) 808.
- in the free air, (31) 212.
- insurance, mutual, in Illinois, (36) 791.
- motor, description, (28) 187.
- movement at Point Reyes Light, (26) 27.
- observations, working up, (34) 614.
- of United States, economic uses, (27) 511.
- of Yosemite Valley, (26) 214.
- origin of, (33) 321.
- pathological effects on plants, (30) 354.
- power—
 - determination, (30) 88.
 - generation of electricity by, (27) 388; (29) 184.
 - use, (28) 187.
 - use in Egypt, (30) 788.
 - use on farms, (27) 484.
- relation to—
 - grape downy mildew, (28) 448.
 - potato late blight, (27) 544.
- rôle in formation of soils, (31) 317.
- rôle in land depletion, (37) 115.
- scale, Beaufort, (33) 321.
- sea, effect on inflorescence of pine, (38) 331.
- sea, on Long Island, (38) 209.
- storm of April 2, 1912, (27) 414.
- storms of May 25-June 6, 1917, (37) 807.
- synoptic, and rainfall, relation, (35) 115.
- velocity—
 - and elevation, (35) 115.
 - diurnal period, (33) 118.
 - effect on meteorological elements in atmosphere, (40) 715.
 - indicator, (35) 618.

Windbreak plants, variety tests, (40) 444.

Windbreaks—

- artificial, tests, (28) 40; (30) 134.
- for irrigated sandy soils, (32) 839.
- for Montana, (40) 447.
- for railways, (36) 745.
- notes, (37) 46, 147.
- trees for, (33) 339.
- use against frost, (27) 240.

Windmill—

- generating plants, tests, (37) 387.
- homemade, description, (35) 189.

Windmills—

- as a source of power, (31) 186.
- economic use, (27) 511.
- for electric lighting and power, (29) 788.
- irrigation in India, (29) 891.
- irrigation pumping, (29) 484; (38) 186.
- pumping, (32) 87; (33) 391.
- power, notes, (27) 790.

Windstorm at Seattle, Washington, (29) 812.

Windstorm, severe, in Indiana, (26) 614.

Windstorms at Springfield, Ill., (26) 214.

Wine—

- abnormal, treatment with milk or charcoal, (29) 119.
- acid reduction in, (35) 617.
- acid titration, indicators in, (30) 413.
- acidity in, (35) 113.
- acids of, (37) 310.
- adulterated, detection, (31) 412.
- alcohol-free, preparation, (29) 312.
- aldehydes in, (37) 805.
- analyses, (26) 312; (29) 119; (30) 612, 712; (35) 617; (36) 801; (37) 12, 310; (38) 203.
- arsenic content, (26) 841.
- as affected by grafting, (28) 437.
- as affected by phosphates, (27) 326.
- bibliography, (31) 339.
- blending, (35) 647.
- bromin absorption of, (31) 412.
- by-products, utilization, (26) 512.
- chemistry of, (26) 512.
- citric acid in, (33) 613.
- clarification, (39) 114.
- composition as affected by clarification, (29) 414.

Wine—Continued.

- crystalline deposits in, (30) 612.
 - definitions, (31) 114.
 - determination of solids in, (32) 715.
 - diminution of acidity in, (29) 117.
 - diseased, examination and treatment, (30) 712.
 - diseases, notes, (26) 512.
 - distillation residues, utilization, (32) 209.
 - dry, handbook, (26) 715.
 - effect of X-rays on fermentation, (27) 231.
 - exports from South Australia, (29) 837.
 - fermentation, (35) 616, 647.
 - fermentation—
 - action of manganese sulphate in, (33) 507.
 - changes in, (30) 612.
 - sulphurous acid and selected yeast in, (36) 113.
 - formation, (34) 43.
 - from American native grapes, (30) 16; (35) 647.
 - fruit, fermentation, (37) 509.
 - fruit, manufacture, (38) 806.
 - fruit, pure yeast in, (36) 509.
 - grape and fruit, lactic acid in, (31) 315.
 - growers' schools, instruction in, (30) 195.
 - home manufacture, (40) 116.
 - Hungarian, analyses, (36) 466.
 - Hungarian, production and composition, (35) 266.
 - industry in—
 - Argentina, (31) 47.
 - California, (26) 46; (35) 343, 646.
 - German East Africa, (27) 40.
 - New South Wales, (27) 442.
 - Spain, (27) 540; (35) 744.
 - United States, (35) 744.
 - Uruguay, (32) 744.
 - lead arsenate n, (27) 243.
 - "l'clair bleu" test, (40) 311.
 - lees, dried, fertilizing value, (29) 129.
 - making—
 - cooperative societies in France, (34) 690.
 - experiments, (30) 612; (37) 144.
 - grapes for, fermentation organisms, (40) 110.
 - investigations, (28) 209; (36) 801.
 - methods, efficiency, (32) 208.
 - notes, (29) 414; (32) 117, 208.
 - school at Klosterneuburg, report, (29) 414.
 - yeast and sulphurous acid in, (34) 207.
 - manufacture, treatise, (26) 512.
 - methods of analysis, (26) 805; (27) 205; (30) 612; (31) 114.
 - microorganisms in, (29) 209.
 - of high alcohol content, fermentation, (36) 716.
 - orange, manufacture, (30) 814.
 - pentose and furfural formation in, (31) 316.
 - pomace, composition and detection, (36) 205.
 - preparation, (27) 412.
 - preparing and conserving, (35) 343.
 - press residues, utilization, (29) 117.
 - production in Spain, (27) 344; (29) 439; (31) 238; (33) 539; (36) 742; (39) 845.
 - production in United States, (33) 894.
 - quality as affected by fineness of soils, (26) 813.
 - refermentation, (30) 612.
 - residues, methods of analysis, (31) 806.
 - secondary fermentations in, (30) 712.
 - utilization, (27) 441.
 - vinegar disease, treatment, (37) 314.
 - white, sulphurous acid in, (29) 264.
 - yeast, effects of salts on, (38) 503.
 - yeasts in, (30) 711, 712; (36) 802.
 - yellow coloring matter in, (31) 412.
- Wines—**
- Californian, analyses, (28) 461.
 - plastered, tablet reagents for, (26) 608.
- Winnemana argei** n.g. and n.sp., description, (26) 63.
- Winter—**
- crass, destruction, (26) 333.
 - crass, eradication, (37) 742.
 - indoor aridity, (37) 807.
 - injury in plants, overcoming, (28) 639.
 - minimum temperature, forecasting, (35) 115.
 - moth problem, (40) 547.
 - moth, small, notes, (33) 656.
 - of 1916-17, (37) 513, 807.
 - of 1916-17 in British Isles, (37) 418.
 - of 1917-18, (39) 114.
 - stratus, formation, (37) 116.
 - weather in Florida, (28) 415.

Wintergreen—

- extract, analyses, (35) 663.
 - oil, manufacture in India, (38) 9.
- Winters—**
- classification, (29) 120; (32) 810.
 - of eastern United States, (32) 810, 811.
 - of Washington and Paris, (32) 810.
- Winthemia—**
- fumiferanae n. sp., description, (27) 457.
 - quadrupustulata—
 - notes, (31) 752; (36) 255.
 - parasitic on army worm, (34) 251.
 - studies, (39) 659.
- Winthrop Farm School**, Rock Hill, South Carolina, (34) 597.
- Winton disease** in cattle and horses, cause, (26) 780.
- Wire—**
- cage for pot experiments, (32) 514.
 - fences, construction, (34) 487; (35) 88; (37) 886.
 - fences, cost data, (34) 486.
 - fences, deterioration, (27) 793.
 - fencing materials, composition, (35) 587.
 - frames for beans and peas, (33) 891.
 - insect cages, shading effect, (36) 455.
 - rope, tests, (35) 292.
- Wireless telegraphy**, use in meteorology, (32) 117.
- Wireworm**, common, larval and pupal stages, (37) 765.
- Wireworms—**
- destructive to cereal and forage crops, (35) 261.
 - false, of Pacific Northwest, (37) 259.
 - false, studies, (39) 363.
 - in corn, (29) 858.
 - corn, extermination, (26) 753.
 - ostriches, life history, (35) 678.
 - sheep, treatment, (27) 683; (28) 586.
 - injurious to potatoes, (37) 157.
 - injurious to strawberries, (32) 556.
 - life history and remedies, (38) 54.
 - life history and structure, (29) 476.
 - notes, (29) 252, 653; (30) 454, 753; (31) 155; (32) 753.
 - protection of seed corn from, (33) 657.
 - remedies, (32) 246; (36) 758.
 - studies, (30) 546; (32) 555; (40) 647.
 - twisted, in sheep, (40) 88.
- Wisconsin—**
- Potato Growers' Association, report, (28) 738.
 - River flood, (28) 415.
 - River flood of October, 1911, (26) 614.
 - rivers, profile surveys, (37) 84.
- Station—**
- association, report, (35) 899.
 - financial statement, (28) 899.
 - notes, (26) 195, 600; (27) 100, 800; (29) 399, 700; (30) 498, 600, 699; (31) 799, 500; (32) 199, 398; (33) 796; (34) 98, 396, 798; (37) 99, 198; (38) 299; (39) 97; (40) 200, 900.
 - report, (31) 899; (33) 398; (35) 595; (36) 898.
 - report of director, (28) 899.
 - University, notes, (26) 195, 495, 600; (27) 100, 800; (28) 398, 495; (29) 99, 399, 700; (30) 498, 600, 699; (31) 600, 799, 900; (32) 199, 900; (33) 796; (34) 98, 396, 798; (35) 699; (37) 99, 198; (38) 99, 299; (39) 97; (40) 200, 900.
- Veterinary Medical Association**, (36) 676; (37) 477.
- Wistaria—**
- Chinese, crown gall of, (29) 547.
 - gall fly, notes, (29) 159.
 - seed as affected by pod position, (34) 134.
- Witch weed**, eradication, (36) 236.
- Witches' broom—**
- assimilation of carbon dioxide by, (35) 132.
 - cone bearing and cauliflory in, (31) 247.
 - false, in ericaceous plants, (40) 728.
 - nonparasitic, notes, (28) 551.
 - notes, (31) 540; (37) 47.
 - on hickory trees, (38) 253.
 - winter rest in, (34) 135.
- Witchweed**, life history, (26) 440.
- Witgatboom** as chicory substitute, (40) 508.
- Witloof**, culture, (28) 339.
- Woburn Experimental Fruit Farm**, report, (38)[540.
- Woburn field experiments**, (37) 229.
- Wohlfartia magnifica** parasitizing man, (38) 783.
- Wold grass**, yields, (30) 134.
- Wolf moth**, notes, (33) 252.
- Wolffella rufofum** n.g. and n.sp., description, (38) 566.

Wollastonite, fertilizing value, (32) 622; (40) 815.
 Woman movement in German Switzerland, (37) 793.
 Women—
 adult, cost of food for, (35) 861.
 agricultural—
 education for, (36) 793.
 instruction for, (28) 296, 793; (30) 298, 495, 793; (33) 596.
 workers in Germany, (33) 190; (37) 191.
 as affected by muscular work, (29) 568.
 city and country, cooperation between, (29) 465.
 clerks in Bank of England, free luncheons for, (30) 166.
 cooperation among, (30) 395.
 creatinuria in, (39) 873.
 employment in experiment stations, (38) 4.
 employment on farms, (38) 293.
 farm—
 associations of, (31) 98.
 clubs for in France, (30) 200.
 needs of, (32) 890.
 publications for, (30) 197.
 immigrant, fecundity of, (30) 592.
 in agriculture, (32) 389.
 agriculture, organization in Belgium, (27) 94.
 English agriculture, (39) 689.
 horticulture and agriculture, (34) 492.
 relation to English agriculture, (35) 891.
 rural districts, small industries among, (32) 89.
 metabolism, (40) 174.
 on farms in Italy, (31) 593.
 on farms, needs of, (33) 294.
 peasant, in agricultural societies in Italy, (40) 790.
 phosphorus and calcium requirements, (39) 364.
 rôle in agriculture, (31) 98.
 rôle in rural economy, (29) 898.
 rôle in rural improvement, (28) 296.
 rural clubs for, (35) 90.
 rural organizations for, (32) 98.
 short course for, in University of Missouri, (30) 462.
 teachers, agriculture for, (26) 898.
 training for farm work, (36) 394, 496.
 training in State colleges, (32) 491.
 workers in agriculture, (40) 891.
 working, food of, (38) 64.
 Women's—
 clubs, outlines for, (34) 599.
 institutes, (39) 499.
 institutes—
 in British Columbia, (28) 792; (32) 392.
 Canada, (34) 597.
 New Brunswick, (32) 496; (37) 895.
 Nova Scotia, (32) 698.
 Ontario, (28) 695; (36) 692; (38) 196.
 rural organizations, (40) 93.
 share in agriculture, (26) 299.
 work in agriculture in peace and war, (35) 395.
 Wood—*see also* Timber and Lumber.
 absorption of creosote by, (27) 846.
 aging artificially, (29) 444.
 American, durability tests, (35) 241, 656.
 analyses, (34) 425, 561.
 analyses and nutritive value, (35) 164.
 analyses and use as human food, (33) 866.
 anatomical variations in, (36) 447.
 as building material, manual, (35) 147.
 ashes—
 analyses, (26) 715; (32) 424, 520; (33) 723, 819, 821; (34) 521; (35) 127, 128; (36) 27; (38) 521, 625; (40) 517, 621.
 analyses and use, (34) 519.
 as corrective for cottonseed meal toxicity, (34) 79.
 as source of potash, (37) 427, 722, 817; (40) 320.
 as top dressing for hay, (28) 325.
 fertilizing value, (33) 227; (38) 230; (39) 116, 429; (40) 129, 134, 239.
 unbleached, fertilizing value, (29) 632.
 use against mosses, (29) 741.
 utilization, (33) 819.
 ball test for hardness, (28) 441.
 blocks, use in paving, (33) 890.
 borers, flat-headed, biology, (39) 467.
 borers, notes, (32) 552.

Wood—Continued.

boring—
 beetle, notes, (39) 234.
 crustaceans, bibliography, (36) 46.
 insects, investigations, (32) 755.
 moth in Lesser Antilles, (32) 554.
 caloric power, (35) 347.
 cell wall, digestibility, (36) 563.
 chemistry of, (30) 10; (37) 502, 710.
 coloring in living spruce, (27) 527.
 coniferous, gross and microscopic structure, (31) 743.
 creosoted, disappearance of phenols from, (29) 111.
 creosoting, (26) 50; (39) 394.
 crop of the farm, (40) 792.
 decay, studies, (37) 109, 727.
 density and porosity, (32) 47.
 destroying fungi, (39) 255.
 destroying fungi—
 abortive sporophores of, (33) 552.
 black zones of, (38) 555.
 descriptions, (31) 247.
 differentiation, (38) 652.
 new hosts for, (37) 846.
 notes, (32) 54.
 studies, (40) 350.
 destruction by fungi, (34) 547.
 determination of cellulose in, (39) 614.
 diseased, imbedding and staining, (40) 843.
 disinfection, (34) 780.
 distillation experiments, (31) 19.
 distillation in United States, (30) 744, 845.
 dry rot affecting, (31) 248, 547.
 dry rots, studies, (39) 651.
 electrical resistance, (35) 347.
 elements, longevity and death of, (28) 644.
 elm, (39) 546.
 fiber, analyses, (27) 371.
 flour, nature and use, (34) 839.
 for street paving, merits, (28) 645.
 for war uses, (38) 47.
 fuel—*see also* Firewood.
 production and use, (38) 847.
 situation, (40) 153.
 tests, (29) 544.
 use, (40) 300, 641.
 value, (31) 394.
 greening, cause, (32) 341.
 growth and structure as affected by defoliation, (30) 228.
 hardness, tests, (32) 543.
 heat of absorption of water in, (29) 135.
 identification, (33) 143, 297; (38) 645.
 impregnation with creosote oils, (28) 844.
 industry of Dutch East Indies, (30) 697.
 insulated, manufacture, (29) 444.
 leopard moth, notes, (28) 353.
 lice, check-list, (40) 547.
 lice, economic, of British Isles, (31) 758.
 manufacture of sugar from, (28) 571.
 meal, preparation and use, (36) 367.
 mechanical failure, (29) 543.
 microscopic identification, (37) 46.
 nutritive value, (34) 561; (36) 561.
 of trees, regional spread of moisture in, (40) 541.
 of willow as affected by *Polyporus lucidus*, (39) 654.
 oil, Chinese—
 detection, (28) 412.
 notes, (30) 616.
 polymerization, (34) 607.
 oil tree, Chinese—
 culture in United States, (30) 535.
 notes, (28) 843; (32) 539.
 oil trees of China and Japan, (30) 46.
 paving blocks, improving strength of, (28) 441.
 paving experiments in Minneapolis, (26) 544.
 pea silage, analyses, (29) 270.
 penetration by—
 gases, liquids, and finely divided solids, (28) 744.
 inorganic salts, determination, (26) 242.
 pewee, food habits, (38) 457.
 pipe for irrigation water, (32) 585.
 pipe for water supply, (36) 87.
 pipe, life of, (34) 388.
 pipes, specifications, (37) 487.
 pith-ray flecks in, (29) 44.
 powellized, detection, (26) 142.

Wood—Continued.

preservation, (28) 744; (29) 444; (30) 447, 646, 647; (31) 840; (33) 845; (35) 843; (38) 248, 249, 317; (39) 292.

preservation—

handbook, (36) 844.
importance, (34) 240.
papers on, (36) 45.
textbook, (33) 243.
with fluorids, (27) 148; (30) 239.

preservative, siliceous, notes, (30) 647.

preservatives—

analyses, (29) 344.
containing fluorin, (30) 646.
investigations, (28) 441.
tests, (32) 309, 841.
toxicity, (33) 651.
use, (27) 746.
valuation, (27) 746.

preserving industry in America, (28) 844; (30) 347.

preserving oils, antiseptic tests, (29) 111.

products, relation to woodpeckers, (26) 58.

protection against decay, (27) 648.

protection against dry rot, (26) 544.

pulleys, tests, (28) 590.

pulp—

ground, notes, (35) 114.
industry in Canada, (34) 48.
industry in United States, (37) 748; (38) 447.
manufacture, (37) 148.
manufacture, soda process, (31) 715.
mills of United States, (40) 641.
production in 1917, (40) 543.
sulphite process, (38) 809.
treatise, (26) 142.

residue as a feeding stuff, (30) 565.

resinous tracheids, (39) 451.

rich resinous, studies, (28) 826.

sawing rigs, (40) 588.

screws, transverse strength of, (30) 889.

seasoning, (37) 886.

seasoning, treatise, (38) 248.

specific heat, (28) 50.

specimens in Madras Government Museum, (37) 748.

spectrophotometric investigations, (32) 144.

stave pipe, construction and use, (33) 886.

stave pipe, use, (31) 685.

stave pipe, use in irrigation, (29) 84.

structure, bibliography, (28) 744; (29) 344.

structure of East Indian pines, (30) 46.

structure, terminology, (26) 442.

substitutes for, (38) 248.

sugar from, (30) 711.

sycomore, distinguishing characters, (39) 50.

testing, large v. small test pieces, (28) 441.

tick, control in Bitter Root Valley, (29) 658.

tick, notes, (37) 459.

transportation in French colonies, (30) 447.

transverse strength in, (35) 347.

turpentine, production and uses, (26) 413.

turpentine, investigations, (28) 512.

use, (33) 297.

used by manufacturers in Canada, (26) 644.

using industries in—

Arkansas, (27) 443.
Connecticut, (28) 644.
Florida, (29) 644.
Indiana, (34) 153.
Iowa, (30) 46.
Kentucky, (34) 839.
Maine, (28) 743.
New Hampshire, (29) 240.
New York, (30) 536; (38) 146.
Ohio, (30) 536.
Ontario, (29) 843.
Prairie Provinces, Canada, (33) 646.
Quebec, (39) 648.
South Carolina, (30) 536.
United States, (38) 751.
Vermont, (28) 843.
West Virginia, (35) 44.

utilization, (28) 50.

utilization, rôle of chemistry in, (34) 538.

vessels in, notes, (26) 51.

vinegar, condensation, (35) 347.

volume and increment tables, (34) 743.

wasps, Nearctic, (39) 869.

wasps, studies, (30) 59.

Wood—Continued.

waste as source of ethyl alcohol, (40) 17.

waste, utilization, (26) 613; (29) 149; (30) 711;

(34) 839; (35) 748, 843; (39) 146.

waste utilization, treatise, (35) 148.

water conductivity, (40) 821.

Woodchuck, host of spotted fever tick, (26) 64.

Woodchucks—

relation to spotted fever, (31) 160.

revision, (33) 57.

Wooden flumes, design and construction, (36) 586.

Woodhouse, E. J., biographical sketch, (39) 200.

Woodland—

and prairie, ecology of tension zone, (38) 521.

surveys, graphic calculation in, (40) 153.

Woodlands—

British, yield tables, (27) 646.

farm, development under Smith-Lever Act, (40) 641.

management, (38) 543.

of Guindos hacienda in Chile, (35) 842.

on the farm, (39) 546.

Woodlawn school garden, description, (31) 393.

Woodlot products—

handling and marketing, (38) 543.

marketing, (34) 839; (35) 147, 453; (36) 45, 244,

745; (37) 195, 548, 838, 895; (40) 343, 744.

marketing cooperatively, (32) 192.

use, (36) 745.

Woodlots—

care and improvement, (34) 839.

county or community working plans, (35) 841.

farm, (33) 242.

farm, handbook, (31) 640.

farm, handling, (35) 242.

farm, notes, (28) 897.

for central Indiana, (27) 442.

fuel from, (38) 248.

growing from seed, (27) 148.

improvement, (39) 546.

in eastern United States, (37) 245.

New England, (37) 451.

United States, (35) 746.

Wisconsin, (36) 744.

management, (27) 745; (28) 147; (31) 445; (36)

447; (37) 451.

notes, (32) 440; (38) 348, 847.

regenerating, (38) 846.

survey in New York, (34) 741.

taxation, (39) 247.

Woodman's—

certificate of English Aborigicultural Society, (28) 795.

handbook, (27) 846; (36) 446.

Woodpecker—

Jamaica, economic status, (40) 254.

Lewis, feeding habits, (29) 51.

Woodpeckers—

British, food habits, (35) 460.

destructive to codling moth, (27) 559.

destructive to leopard moth, (26) 557.

of Colorado, (39) 556.

partridge, coccidiosis in, (26) 187.

relation to trees and wood products, (26) 58.

Woods—

American—

handbook and bibliography, (27) 42.

specific gravity and weight, (30) 445.

specimen book, (26) 442; (30) 445.

tyloses in, (30) 844.

cedar, characteristics and use, (29) 842.

commercial, of United States, (26) 50.

Coniophora cerebella on, (39) 553.

dicotyledonous, intercellular canals, (39) 145.

foreign species, culture in Prussia, (26) 140.

Kerry, notes, (27) 646.

management, (27) 745.

oak, of North America, (26) 338.

of Alaska, (29) 342.

America, mechanical properties, (28) 440.

Argentina, (28) 239.

Brazil, (34) 440.

British Guiana, (35) 543; (39) 647.

Dutch East Indies, (39) 246.

Indo-China, (40) 46.

Montana, (35) 542.

New York, structure, (35) 897.

Ohio, (35) 147.

Pacific coast, handbook, (35) 649.

Philippines, (36) 644.

Woods—Continued.

- of Philippines, identification, (29) 747; (33) 844.
- Philippines, tests, (28) 343.
- Philippines, uses, (28) 439.
- Queensland, (37) 548.
- Sao Paulo forests, (39) 351.
- United States, (30) 46.
- United States, manual, (27) 541.
- United States, mechanical properties, (28) 843; (37) 885.
- protection against fungi, (27) 354.
- relative durability, (28) 345.
- resinous, distillation by saturated steam, (27) 745.
- resinous, utilization of waste, (28) 512.
- Rocky Mountain, for telephone poles, (30) 843.
- treated, strength, (26) 340.
- Woodwork, varnishing and finishing, (32) 162.
- Woodworking—
 - agricultural, for schools, (36) 693.
 - exercises for agricultural school shops, (30) 94.
 - problems, (35) 298, 898.
- Wooly—
 - aster—
 - analyses, (26) 503.
 - identification, (29) 77.
 - notes, (31) 578.
 - poisoning of sheep by, (28) 197.
 - toxicity, (39) 184.
 - cuttings, stimulation of root growth, (39) 826.
 - plants, *see* Plants.
 - tissues, alterations in, (30) 223.
- Wool—
 - alkali and weathering studies, (39) 172.
 - amino group in, (34) 202.
 - as affected by dyes, (30) 584.
 - black and white, nitrogen ratios in, (30) 707.
 - breaking strength determination, (39) 774.
 - Canadian, classification, (32) 771.
 - changes in weight during storage and transit, (29) 467.
 - characteristics, (36) 270.
 - clips, successive, weights, (39) 775.
 - contest, notes, (29) 69.
 - dead fibers in, studies, (26) 473.
 - determination of quality, (36) 270.
 - disinfection, (40) 783.
 - dust, analyses, (28) 523.
 - dynamometer for testing, (32) 261.
 - effect of dips on, (33) 571.
 - exports from Iceland, (27) 71.
 - exports from Peru, (27) 469.
 - fat, absorption in the intestine, (29) 768.
 - fat, stearin of, (26) 612.
 - fertilizer, analyses, (26) 727.
 - fertilizing value, (26) 323; (35) 126.
 - fiber as affected by humidity, (39) 774.
 - fiber, strength and elasticity, studies, (26) 570.
 - grading, microscopic method, (33) 171.
 - handling, (39) 773.
 - handling and marketing, (33) 270; (34) 265, 372.
 - handling in the West, (37) 572.
 - hygroscopic qualities, (26) 473.
 - industry—
 - in Australasia, (29) 872; (32) 261; (33) 270.
 - Australia, (29) 570.
 - British Empire, (28) 874.
 - New Zealand, (31) 467.
 - United States, (26) 389; (30) 870; (31) 167, 868.
 - instruction in New South Wales, (26) 799.
 - statistics, (36) 473, 769; (39) 477.
 - treatises, (40) 875.
 - investigations, (30) 568; (32) 770.
 - maggots of sheep in United States, (34) 554.
 - manual, (26) 874.
 - marketing, (29) 194, 467.
 - marketing cooperatively, (34) 91; (38) 494.
 - marketing in Canada, (33) 470.
 - monograph, (28) 263.
 - notes, (27) 373.
 - of primitive sheep, (29) 469.
 - of wool-producing and of kemp-producing sheep, (34) 468.
 - preparation and manufacture, (32) 170.
 - preparation for market, (29) 793.
 - preparing and grading for export, (27) 71.
 - price calculator, description, (38) 774.

Wool—Continued.

- prices, 1818-1915, (38) 575.
- prices of in Ireland, (31) 96.
- production—
 - and marketing, (28) 73.
 - and prices in United States, 1908-1918, (40) 93.
 - as affected by sulphur, (28) 872.
 - centers in United States, (26) 386.
 - consumption, and prices, (34) 668.
 - in Algeria, (27) 71.
 - Australasia, (30) 372.
 - Australia, (38) 372.
 - 1912, (28) 770.
 - Spain, (29) 370.
 - United States, (38) 874.
 - inheritance, (34) 74.
 - statistics, (33) 73.
- properties, (33) 670.
- quality as affected by fineness, (32) 365.
- scouring and dyeing, (35) 375.
- scouring wastes, analyses and treatment, (34) 688.
- scourings as source of potash, (34) 328.
- separating from hides, (28) 268.
- shearing, packing, and storing, (31) 666.
- shrinkage in weight, (34) 372.
- statistics, (30) 871.
- statistics in United States, (28) 390.
- strength and elasticity tests, (26) 769.
- studies, (35) 477.
- sulphite in, (28) 311.
- tensile strength and elasticity, (33) 762.
- textbook, (37) 894.
- trade, terms used in, (33) 270.
- treatise, (31) 268; (32) 365.
- waste, analyses, (32) 32.
- waste, availability of nitrogen in, (38) 423.
- waste, fertilizing value, (29) 129; (33) 125, 327.
- water absorption capacity, (37) 736.
- wax, analyses, (35) 203.
- Woolen mill shoddy dirt, analyses, (32) 32.
- Woolly—
 - aphis, *see* Aphis, woolly, and Apple aphis,
 - woolly.
 - bear caterpillars, (33) 97.
 - thistle, geographical distribution, (26) 335.
- Work, effect on milk yield and fat content, (30) 475.
- Work, mental, effect on metabolism, (27) 273.
- Working—
 - classes in America, standard of living, (26) 157.
 - classes, standard of living, (29) 766.
 - power in men as affected by breakfast and caffeine, (39) 68.
- Worm—
 - killer, analyses, (33) 735.
 - nests in Australian cattle, (26) 183.
 - nodules in Australian cattle, (31) 182.
 - nodules in cattle, (28) 680; (32) 376, 377; (33) 154; (34) 581, 582; (37) 181; (38) 82; (39) 589, 862.
 - parasites of Queensland, (34) 576.
- Worms—
 - in blood vessels of horses, (29) 783.
 - hogs, diagnosis, (33) 278.
 - hogs, notes, (31) 286.
 - hogs, treatment, (33) 86; (35) 488.
 - sheep, treatment, (29) 587.
 - swine and goats, (37) 779.
 - injurious to pigs, (27) 181.
 - intestinal, inoculation of disease germs by, (26) 658.
 - parasitic—
 - dispersal of eggs of, by flies, (30) 658.
 - of Queensland, (32) 399.
 - remedies, (38) 782.
 - transmission by flies, (38) 563.
 - removing, (40) 482.
- Wormseed, notes, (30) 145.
- Wormwood oil industry in Wisconsin, (34) 237.
- Wort, osmotic pressure and electrical conductivity of, (30) 523.
- Wound—
 - dressings for orchard and shade trees, (32) 637.
 - infection, pathogenic anaerobes in, (38) 483, 503, 504.
 - organisms, counting and identifying, (38) 1782.
 - parasitism and predisposition in plants, (35) 347.
 - tissue formation, notes, (34) 249.

- Wounds—
bacteriological examination, (40) 180.
dressing with sugar, (36) 178.
harness, treatment, (39) 85.
of animals and their treatment, (40) 84.
ptomaines in, (38) 783.
septic, anaerobes from, (39) 488.
tetanus bacilli in, (39) 389.
treatment, (26) 580; (34) 675, 876; (35) 882; (36) 479; (37) 176, 477, 688, 876; (38) 283, 585, 782; (39) 286, 387, 680, 885; (40) 13, 83, 84, 181, 182, 285, 581, 678, 679, 779, 882, 883, 884.
- Wrens, house, egg-laying cycles, (37) 869.
- Württemberg Cheese School and Experiment Station, (30) 898.
- Wyoming—
state engineer, report, (36) 885.
- Station—
financial statement, (26) 599; (28) 599.
notes, (27) 700; (28) 399; (29) 399, 600; (30) 700; (31) 199; (32) 398, 498, 900; (33) 600; (34) 497; (35) 98; (36) 697; (37) 198, 300, 899; (38) 99, 800; (39) 600; (40) 99, 499, 900.
publications, index, (33) 299.
report, (30) 697; (32) 796; (34) 694; (37) 396; (39) 196.
report of director, (26) 599; (28) 599.
- University, notes, (26) 696, 797; (27) 700; (28) 399; (29) 399; (32) 398, 498, 900; (34) 497; (35) 98; (37) 99, 198, 300, 399, 899; (38) 99, 500; (39) 98, 198, 400; (40) 99, 900.
- Wyomingite, composition, (35) 503.
- Xanthin—
action on isolated intestine, (37) 471.
bases, determination in cocoa, tea, and coffee, (30) 810.
cleavage in the human body, (27) 272.
effect on plant growth, (28) 324.
in tea, (31) 358.
occurrence in rabbit meat, (26) 563.
- Xanthium—
canadense, eradication, (36) 836.
canadense, variations in, (30) 729.
isolation of types in, (34) 32.
peculiar modifications of burs in, (33) 227.
seed coat, investigations, (30) 132.
seed, germination, rôle of oxygen in, (30) 629.
seed, germination studies, (26) 531.
spp., eradication, (37) 542.
strumarium, analyses, (33) 466.
- Xanthogramma—
divisa, life history, (38) 362.
grandicornis, notes, (27) 656.
scutellaris, notes, (30) 156.
- Xanthohumol from hops, (31) 311.
- Xanthomelanodes peruanus, notes, (29) 358.
- Xanthophyll—
elaboration in *Iris germanica*, (34) 524.
fate of during digestion, (31) 275.
formation, (29) 827; (37) 632.
pigment, elaboration, (38) 127.
spectro-colorimetric estimation in plants, (31) 520.
- Xanthorhoe praefectata—
life history and remedies, (38) 257.
parasites of, (39) 159.
studies, (40) 265.
- Xanthorhoea—
quadrangulata, resin formation, (40) 449.
spp. of South Australia, (37) 548.
- Xanthosoma—
culture experiments, (40) 434.
spp., analyses and culture, (31) 41.
storage roots, (35) 750.
varieties, (35) 134; (38) 526.
- Xanthostylum sp., notes, (28) 858.
- Xanthoxylum, polyembryony, (39) 527.
- Xenia—
and other influences following fertilization, (38) 526.
in beans, (28) 431; (31) 224, 836.
corn, (37) 537.
fowls, (33) 471.
pears, (30) 740.
rice, (32) 230.
walnuts, (35) 449.
wheat, (30) 235.
white mustard, (35) 335.
- Xenocrepis mexicana n.sp., description, (36) 555.
- Xenoparasitism, structural relations in, (28) 332; (30) 223.
- Xenopsylla cheopis—
bionomics of, (29) 756; (31) 353.
distribution on rats, (29) 755.
remedies, (31) 353.
- Xenulenus ruskini n.sp., description, (34) 556.
- Xeromorphy in marsh plants, studies, (27) 829.
- Xerophily of ericads, relation of winter to, (31) 728.
- Xerophthalmia, relation to diet, (38) 268.
- Xestopsylla gallinacea, see Hen flea.
- Xiphidium varipenne, notes, (27) 155; (31) 249.
- Xiphidria, Nearctic species, (39) 869.
- X-rays, see Roentgen rays.
- Xylaria—
polymorpha and *X. digitata*, notes, (38) 249.
polymorpha, notes, (36) 649.
spp. on apple roots, (37) 457, 754.
spp., relation to black root rot, (40) 251.
vagans n.sp., description, (35) 244.
- Xylebiops basillare—
notes, (38) 762.
on pecan, (38) 157; (39) 557.
studies, (31) 852.
- Xyleborinus (*Xyleborus*) pecanis, notes, (38) 762.
- Xyleborus—
coffea, notes, (27) 458.
compactus, notes, (31) 849.
compactus, studies, (32) 758.
dispar, notes, (27) 857; (30) 161; (31) 61; (34) 851; (37) 255.
dispar, studies, (29) 858.
fornicatus, digest of data, (38) 564.
fornicatus, notes, (32) 758, 852; (40) 266, 453.
immaturus in Hawaii, (34) 59.
immaturus, notes, (29) 234.
parvulus, notes, (28) 353.
perforans, notes, (26) 354.
sp., notes, (26) 60; (29) 53, 858; (31) 249; (33) 554.
spp., notes, (27) 458; (28) 555; (29) 158.
spp., studies, (31) 852.
xylographus, studies, (39) 65.
- Xylina—see also Green fruit worm.
bethunei, carnivorous habits, (34) 255.
sp., notes, (27) 755.
spp. remedies, (33) 59.
- Xylobiops, see Xylebiops.
- Xylomeses sunia, remedies, (37) 256.
- Xylometer, description, (38) 46.
- Xylomiges eridamia on castor bean, (40) 453.
- Xylophagus lugens, notes, (28) 158.
- Xylophruideae agrilli—
n.g. and n. sp., notes, (32) 250.
n.sp., description, (29) 563.
- Xylorrhiza parryi, analyses, (26) 503.
- Xylose—
behavior in fermenting mixtures, (27) 502.
decomposition by yeast, (36) 609.
determination, (26) 709; (37) 617.
isomeric tetracetates of, (34) 408.
preparation from corncobs, (40) 17.
preparation from cottonseed hulls, (37) 410.
reducing power, (33) 314.
- α -D-Xylose, crystallography and optical properties, (40) 202.
- Xylothrips—
flavipes, injurious to silk, (27) 456.
gibbicollis, lead-boring, (39) 467.
- Xylotrichus aceris n.sp., description, (37) 566.
- Xylotrya sp., notes, (31) 254.
- Yacca gum, notes, (40) 449.
- Yackas of South Australia, (37) 548.
- Yacon, culture experiments, (30) 640.
- Yakima Indian Reservation drainage project, (29) 289.
- Yakima irrigation project, Sunnyside unit, (27) 586.
- Yaks, measurements, (27) 672.
- Yam—
diseases, notes, (39) 248, 453.
mucin, notes, (29) 308.
scale, notes, (40) 259.
- Yams—
analyses and cooking tests, (40) 557.
as food, (36) 561.
beetle attacking, (40) 260.
culture and use, (40) 763.
culture experiments, (29) 637; (32) 227; (38) 336; (40) 434.
culture in Philippines, (26) 361; (40) 231.
fertilizer experiments, (29) 637; (30) 525.

Yams—Continued.

- Indian, composition, (27) 268.
- insects affecting, (27) 453; (30) 546; (34) 349.
- leaf disease of, (36) 348.
- mucinase in, (34) 312.
- notes, (26) 362, 840; (27) 842; (31) 334.
- treatise, (33) 437.
- tuber and wilt diseases, (37) 452.
- varieties, (26) 534, 733; (27) 233; (28) 828; (29) 637; (30) 525; (31) 524; (33) 535; (35) 134; (36) 735; (38) 33, 335, 526; (40) 231, 522, 637.
- weevils affecting, (38) 864.
- Yaqona, insects affecting, (27) 453.
- Yarn making, textbook, (40) 899.
- Yarrow seed, vitality, (27) 740.
- Yarrow, volatile oil of, (35) 807.
- Yautias—
 - as food, (36) 561.
 - culture, (38) 231.
 - culture and analyses, (32) 37.
 - culture experiments, (29) 637.
 - culture in Philippines, (40) 244.
 - fertilizer experiments, (29) 637.
 - notes, (26) 362; (27) 842.
 - varieties, (29) 637; (33) 535.
- Yearbooks of United States Department of Agriculture, index, (29) 599.

Yeast—

- accessory growth substance in, (38) 503.
- accustomation to galactose, (28) 202.
- acid-destroying, effect on lactic bacteria, (29) 8.
- alcohol production by, (40) 326.
- and vinegar grains, analyses, (36) 667.
- antineuritis base of, (28) 67.
- antipolyneuritic substances from, (40) 174.
- as affected by—
 - metallic salts, (28) 527.
 - spices, (38) 469.
 - volatile conifer products, (32) 618.
- as beriberi preventive, (28) 761.
- feeding stuff, (36) 367.
- food, (34) 164.
- leavening agents, (33) 66.
- polynuritis preventive, (28) 761.
- assimilation—
 - investigations, (28) 824.
 - of nitrogen by, (28) 35; (30) 629; (32) 728.
 - of sodium thiosulphate by, (29) 29, 30.
- autofermmentation of, (26) 867.
- autolysis, (39) 10.
- autolysis, synthetic processes in, (32) 710.
- bacteria, and molds, treatise, (27) 727.
- baker's, studies, (31) 555.
- cell, nutritional physiology of, (32) 308.
- cells—
 - assimilation of nutrients by, (29) 732.
 - formation of glycogen in, (28) 631.
 - living, as affected by phosphates, (26) 309.
 - permeability, (26) 326.
- chemistry of, (34) 711.
- cleavage of methyl glucosid by, (30) 11.
- combination as feeding stuff, (30) 565.
- composition and digestibility, (27) 669; (34) 165.
- cooked, as cattle feed, (27) 277.
- culture and tests, (30) 712.
- cultures, pure, use in wine making, (28) 209.
- dead, formation of carbon dioxide by, (37) 203.
- decomposition of lactic acid by, (37) 202.
- decomposition of silicates by, (31) 121.
- determination of acidity, (29) 864.
- development in various media, (30) 111.
- development of reproductive organs, (37) 631.
- dietetic value, (36) 153.
- differentiation of various kinds, (33) 611.
- dried—
 - analyses and feeding value, (36) 571.
 - as feeding stuff, (33) 467; (34) 298.
 - composition, (33) 467.
 - effect on milk, (34) 471.
 - enzymes of, (30) 504.
 - feeding value, (26) 463.
 - for cows, (36) 374.
 - domestic animals, (28) 363.
 - horses, (30) 175.
 - pigs, (27) 874.
 - nutritive value, (36) 864.
 - use in preparation of molasses feeds, (26) 557.
 - v. meat meal for pigs, (23) 668.
- dry beer, analyses and feeding value, (29) 467.

Yeast—Continued.

- drying, (27) 669.
- effect on—
 - betain, (33) 312.
 - fermentation of tea, (32) 111.
 - protein formation, (31) 223; (35) 634.
 - soils, (31) 818.
 - tartaric acid, (29) 504; (36) 801.
- examination, (30) 669.
- factories, fermentation processes in, (29) 509.
- fermentation of albumin in, (33) 824.
- fixation of atmospheric nitrogen by, (26) 123.
- Food, Arkady, effects, (40) 762.
- food hormones of, (36) 865; (40) 463.
- food, tests, (39) 366.
- for bread making, (39) 203.
- for cows, (32) 871.
- for the Tropics, (31) 166.
- formation of invertase in, (28) 202, 408.
- forms of in wine, (30) 711, 712.
- fungi, protein metabolism of, (33) 202.
- glycolytic ferment, (27) 765.
- grains, analyses, (38) 665; (40) 72, 571, 665.
- grains, dried, analyses, (35) 867; (38) 67, 369.
- growth in arsenic solutions, (35) 281.
- growth-promoting substance in, (36) 160.
- in butter, notes, (26) 478.
- in silage, (27) 204.
- in wine fermentation, (36) 802.
- invertase content, increasing, (31) 410.
- invertase, hydrolyzing properties, (32) 803.
- isolation and testing of pure cultures, (29) 119.
- isolation of fat from, (29) 459.
- making, old-time method, (40) 834.
- manufacture, (26) 358.
- mixed cultures v. pure cultures, (29) 714.
- new glycolytic ferment of, (28) 710.
- nitrate reduction by, (33) 726.
- nutriments in bread making, (36) 261.
- nutritive value, (36) 464.
- osmotic pressure and electrical conductivity of, (30) 523.
- penetration of egg shells by, (29) 765.
- preparation and utilization as food, (35) 266.
- preparation of vitamin fraction, (35) 311.
- production of alcohol by, (29) 714.
- protein, examination, (36) 501.
- protein substances of, (32) 803.
- protein synthesis by, (27) 525.
- proteoclastic enzymes, (39) 607.
- pure, use in wine making, (32) 117, 208.
- relation to iodine compounds, (29) 133.
- relation to organic soil constituents, (29) 817.
- resistance to disinfectants, (29) 478.
- respiratory pigments of, (26) 325.
- staining, Gram's method, (31) 478.
- stimulation by poisonous substances, (27) 131.
- storage of oxygen by, (28) 329.
- symbiosis by various types of, (29) 714.
- therapeutic action in polynuritis, (30) 79.
- thermal death point, (38) 468.
- use in carbohydrate analysis, (35) 206, 315.
- use in preparation of media, (40) 403.
- use in wine making, (34) 207.
- utilization in the human organism, (27) 168.
- utilization of inulin by, (31) 224.
- vitamin-fraction from, (29) 664.
- vitamins, studies, (39) 667.
- waste as feeding stuff, (34) 262.
- wine, effects of salts on, (38) 503.

Yellow fever—

- investigations, (37) 357.
- mosquito—*see also* Stegomyia.
- distribution and bionomics, (27) 656.
- early name, (36) 532.
- notes, (29) 656.
- occurrence in Russia, (33) 749.

Yellow—

- jasmine, poisoning of cattle by, (34) 80.
- necked caterpillar, notes, (27) 755; (39) 761.
- rattle as a weed on arable land, (30) 141.
- rattle, eradication, (40) 833.
- rocket, eradication, (37) 742.
- scale, notes, (23) 553.

Yerba maté—

- adulteration, (40) 553.
- alkaloids in, (31) 358.
- culture, (32) 142.
- seeds, germination, (36) 445.
- tea, analyses, (32) 856; (35) 693.

- Yerba—
rosario, culture, (34) 736.
sante mealy bug, notes, (29) 455.
- Yew—
culture experiments, (26) 141.
diseases, notes, (26) 853.
Pacific, density and porosity, (32) 47.
- Yezosiphium n.g., description, (40) 60.
- Yoghourt—
analyses, (26) 80.
bacillus, cultivation, (27) 765.
bacillus, studies, (35) 278.
bacillus, tests of strains, (34) 574.
bacteriology of, (29) 279, 376, 377.
bread, notes, (27) 765.
manufacture, (28) 177.
methods of analysis, (31) 114.
preparation, (29) 376, 377.
preparation and use, (27) 75; (34) 474.
preparations, notes, (28) 278.
preparations, supervision of trade in, (28) 374.
studies, (29) 59.
use against calf dysentery, (26) 682.
- Yohimbine, nature and use, (26) 580.
- Yokohama beans—
culture, (32) 226.
yields, (29) 224.
- Yolk—
formation, peculiar, (26) 573.
nucleus, structure and origin, (28) 766.
- Yorkshire fog, notes, (30) 434.
- Yothers' Formula IV, tests, (29) 262.
- Young, J. R., biographical notes, (40) 869.
- Yponomeuta—
malinella, *see* Apple ermine moth.
spp., notes, (29) 252; (36) 549.
spp., studies, (28) 557.
- Ypophaeomyia malacosomae n.g. and n.sp., description, (36) 554.
- Ypsilophus ligulellus, *see* Palmer worm.
- Yttrium, effect on permeability, (34) 34.
- Yucca—
culture in Cuba, (38) 538.
elata as emergency forage, (39) 772.
elata as silage crop, (38) 471.
filamentosa, saponin of, (37) 9.
- Yuccas—
of Durango, Mexico, (31) 132.
use in feeding, (40) 276, 277, 471.
- Yukon River basin, hydrology, (32) 382.
- Yuma—
Experiment Farm, work, (39) 497.
Experiment Farm, report, (40) 494.
project, irrigation requirements, (40) 484.
- "Zaaidams" in irrigation, (31) 782.
- Zacate, notes, (26) 361.
- Zacaton—
as paper-making material, (34) 318.
description and culture (37) 141.
- Zaghouaniaceae, monograph, (36) 647.
- Zagrammosoma flavolineatum, notes, (36) 655.
- Zaitha flumineum, death feigning, (27) 457.
- Zaleptopygus oberea n.g. and n.sp., description, (29) 562.
- Zalophothrix mirum—
notes, (28) 452.
parasitic on black scale, (26) 556.
- Zanthoxylum spp., notes, (30) 145.
- Zaommoencyrtus submicans n.g. and n.sp., description, (35) 761.
- Zapuco—
binder twine from, (27) 534.
fiber, strength of, (29) 313.
manufacture of alcohol from, (26) 415.
- Zarabacoa, culture, (34) 736.
- Zatropis deuterus n.sp., description, (26) 352.
- Zea—
caragua, analyses, (31) 863.
ramosa and Z. tunicata, hybrids of, (37) 536.
tunicata and Z. ramosa, hybrids, (38) 525.
- Zebra—
caterpillar in Nova Scotia, (39) 160; (40) 57.
horse hybrids, skull characters, (38) 65.
hybridization experiments, (30) 270.
hybrids, utilization, (26) 369.
in pleistocene fauna of France, (27) 468.
mountain, hybrid, notes, (26) 269.
mountain, hybrids, fertility, (26) 163.
- Zebras—
teeth, studies, (27) 674.
treatise, (28) 269.
utilization, (26) 369.
- Zebroids, fertility of, (26) 163.
- Zebu hybrids, notes, (27) 872.
- Zebu-cattle hybrids—
characteristics, (32) 669.
heredity in, (28) 68.
measurements, (27) 672.
notes, (31) 664.
- Zebus—
and bantengs, zoological relationship, (34) 466.
crossing with cattle, (26) 472; (29) 369, 666; (30) 567; (33) 870.
digestion experiments, (29) 69; (30) 568.
half-bred, milk production, (30) 74.
hybridization experiments, (28) 670.
in Brazil, (33) 469.
Formosa and India, measurements, (28) 365.
Jamaica, (27) 172.
Philippines, (32) 260.
Tunisia, (33) 469.
introduction into Texas, (28) 874.
measurements, (27) 672.
piroplasm of, (26) 782.
value for tick-infested regions, (38) 69.
- Zein—
as affected by gastric juice, (28) 66.
effect on wheat gluten, (26) 67.
in nutrition and growth, (31) 559.
lysine content, (29) 408; (31) 559.
nutritive value, (31) 264; (35) 368.
proteoses, physiological action, (34) 71
utilization, (30) 316.
- Zeism, similarity to pellagra, (31) 464.
- Zeitschrift für—
Analytische Chemie, index, (30) 117.
Angewandte Chemie, index, (26) 306; (29) 501.
- Zeile spp. in Great Britain, (32) 454.
- Zelia—
vertebrata, notes, (35) 259.
wildermuthii n.sp., description, (35) 259.
- Zelleria haimbachi n.sp., description, (33) 748.
- Zelotypa fungicola n.sp., description, (33) 360.
- Zenillia pexops, life history, (32) 352.
- Zeolite—
artificial, as source of potash, (37) 322.
as source of potash, (29) 625; (36) 728.
potash, solubility, (34) 328.
- Zeolites—
absorption of phosphoric acid by, (28) 518.
commercial, analyses, (40) 588.
fertilizing value, (29) 211.
relation to ammonia absorption and nitrification, (39) 520.
soil, properties of, (30) 23.
- Zephyranthes-Cooperia hybrids, description, (29) 341.
- Zengophora scutellaris, notes, (40) 758.
- Zeuzera pyrina, *see* Leopard moth.
- Zicrona caerulea, notes, (30) 459.
- Zignoella—
garciniae, notes, (35) 153.
nobilis n.sp., notes, (37) 148.
- Zinc—
antagonism to alkali salts, (39) 619.
arsenate, insecticidal value, (34) 60.
arsenite—
analyses, (27) 756; (31) 49, 142; (38) 643.
effect of soap on settling, (26) 354.
insecticidal value, (27) 161; (29) 253; (32) 158, 846.
tests, (30) 156.
as growth stimulant for hemp, (33) 432.
assimilation by Aspergillus niger, (30) 523, 630, 824; (31) 224.
chlorid—
antiseptic and germicidal value, (37) 176.
as timber preservative, (26) 644; (38) 248
detection in wood, (26) 242.
effect on starch ferments, (27) 109.
use in soil disinfection, (33) 250
compounds—
effect on plant growth, (32) 121
toxicity toward plants, (33) 327
detection in water, (34) 410.
determination, (40) 610.

Zinc—Continued.

- determination in—
 - gelatin, (40) 712.
 - treated wood, (33) 208.
 - water, (39) 205.
- effect on—
 - Aspergillus niger*, (28) 226, 824.
 - Aspergillus* spp., (29) 825.
 - nitrogen-fixing bacteria, (38) 428.
 - fertilizing value, (27) 500; (38) 34.
 - fluorid as pole preservative, (27) 148.
 - in glass containers as source of error in water culture experiments, (32) 128.
 - oxid, effect on germination of seeds, (29) 528.
 - oxid, pharmaceutical, lead in, (40) 413.
 - pipe, use in water supplies, (31) 189.
 - pipes for carrying water, (33) 188.
 - poisoning, notes, (28) 677.
 - rôle in growth of fungi, (29) 28.
- salts—
 - action on plants, (39) 630.
 - as wood preservatives, (32) 841.
 - effect on ammonification and nitrification in soils, (31) 120.
 - effect on disease susceptibility in cereals, (29) 844.
 - effect on wheat, (29) 520; (31) 218.
 - silicofluorid as wood preservative, (30) 646.
- sulphate, effect on—
 - ammonification, (28) 724.
 - olives, (26) 825.
 - plant growth, (30) 130; (31) 325.
 - sulphate, fertilizing value, (30) 627; (40) 440.
 - toxic effect on plants, (38) 628.
 - vessels in culture experiments, effect of, (33) 623.
 - white, effect on linseed oil, (28) 714.
 - yellow, effect on linseed oil, (28) 714.
- Zinckenia fascialis*, notes, (26) 250.
- Zingiberone—
 - corrected name for, (39) 412.
 - isolation and chemical constitution, (37) 612.
- Zinnias, cut, preservation, (31) 837.
- Zinyamunga, composition, (28) 873.
- "Zipangu," analyses, (31) 759.
- Zirconia, distribution in loam soils, (31) 618.
- Zirconium in soils, (31) 720.
- Zizania, cultivation by Indians, (38) 34.
- Zizera labradus*, injurious to alfalfa, (26) 655.
- Zizyphus mucronatus*, analyses and digestibility, (32) 167.
- Zodiacal light, (30) 713.
- Zodiacal light—
 - and counter glow, photography of, (35) 618.
 - Birkeland's theory, (31) 615.
 - nature, (34) 117.
 - notes, (32) 25, 614.
- Zodion, synopsis, (36) 255.
- Zonocerus elegans*, notes, (29) 853.
- Zonocerus elegans*, remedies, (30) 54.
- Zonotrichia albicollis*, coccidiosis in, (26) 187.
- Zooecidia—
 - of Cassel and adjacent districts, catalogue, (26) 65.
 - of northeastern United States and eastern Canada, (39) 868.
 - of Switzerland, catalogue, (31) 656.
- Zooecoids of North Africa, (27) 564; (28) 357.
- Zoogeographical elements of continental regions, (31) 452.
- Zoological—]
 - congress, international, proceedings, (27) 655.
 - index of genera and subgenera, (29) 157.
 - philosophy, treatise, (33) 652.
- Zoologists, vertebrate, rôle in national efficiency, (38) 555.

Zoology—

- agricultural, textbook, (30) 248.
- bibliography, (26) 753; (28) 247; (31) 56; (33) 450; (36) 151.
- Canadian, bibliography, (26) 59; (27) 551; (30) 52; (31) 648; (34) 651; (38) 256.
- contributions to human welfare, (38) 663.
- dictionary, (26) 652.
- economic—
 - fall manual, (27) 756.
 - textbook, (33) 652.
 - treatise, (30) 52; (38) 456.
- experimental, treatise, (26) 163.
- International Congress, (33) 450.
- medical and veterinary, index-catalogue, (26) 753; (28) 248.
- review of literature, (27) 368; (28) 247.
- studies, (31) 277.
- textbook, (26) 652.
- vertebrate, subspecific intergradation in, (40) 254.
- yearbook, (34) 494.
- Zootechny—
 - instruction in, (28) 597.
 - treatise, (26) 873; (30) 170, 174.
- Zophodia—
 - convolutella, notes, (33) 652.
 - grossulariae, see Gooseberry fruit worm.
- Zorotypus hubbardi* n.sp., notes, (40) 260.
- Zostera marina*—
 - analyses, (37) 814.
 - culture for wild ducks, (33) 251.
- Zoysia pungens*, notes, (26) 362.
- Zuider Zee—
 - draining, (40) 487.
 - reclamation, (32) 481.
- Zukalia—
 - n.spp., descriptions, (36) 245.
 - nantoensis n.sp., notes, (39) 753.
 - theae n.sp., description, (38) 648.
- Zygadenin—
 - isolation from death camas, (28) 197.
 - notes, (28) 506; (30) 412.
- Zygadenus—
 - chemical studies, (33) 177.
 - description, (32) 474.
 - intermedius—
 - analyses, (26) 503; (30) 412.
 - crystalline alkaloid of, (28) 506.
 - examination, (27) 881.
 - toxicity, (39) 184.
 - monograph, (33) 177.
 - venenosus, description, (39) 386.
 - venenosus, notes, (32) 778.
- Zygaena ampelophaga*, notes, (40) 648.
- Zygophyllum*—
 - affine microcarpum, analyses and digestibility, (27) 871; (32) 167.
 - tobago, analyses, (33) 466.
- Zygoptera of Illinois, (39) 763.
- Zygorhynchus—
 - moelleri, occurrence in Michigan, (27) 223.
 - vuilleminii, ammonia production by, (36) 221.
 - vuilleminii, ammonifying power, (32) 29.
- Zygosaccharomyces—
 - priorianus, symbiosis by, (29) 714.
 - spp. in wine, (30) 711.
- Zygosporium paraeense* n.sp., notes, (37) 253.
- Zygotaxis*, notes, (30) 328.
- Zymase—
 - formation in plants, (39) 733.
 - in potatoes and sugar beets, (35) 634.
 - in yeast, (26) 309.
 - increasing and inhibiting activity of, (28) 504.
- Zymases as affected by toluol, (28) 803.
- Zymin, enzymes of, (30) 504.

ADDITIONAL COPIES

OF THIS PUBLICATION MAY BE PROCURED FROM
THE SUPERINTENDENT OF DOCUMENTS
GOVERNMENT PRINTING OFFICE
WASHINGTON, D. C.

AT
75 CENTS PER COPY
△

274

